

THE TECHNICAL RESOURCE FOR THE PHYSICAL & ELECTRONIC SECURITY SPECIALIST

# LOCKSMITH LEDGER

November 2022 Volume 82, Number 11

International

\$6.00

## STATE OF THE INDUSTRY 2022



- » Electrified Hinges
- » Padlock Options
- » Automatic Door Operator Installation
- » Vehicle Entry in 2022

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## FEATURES



### COVER FOCUS: State of the Industry 2022

**10 ROUNDTABLE Q&A**  
2022's supply-chain issues have forced locksmiths to diversify and become more adaptable. Despite continuing supply-chain disruptions, the future looks bright, with electronics growing in importance, according to four industry experts.

**16 2022 REPORT**  
This comprehensive Locksmith Ledger report paints a picture of the forces that affect North American locksmiths and attempts to quantify those effects on market performance. Comparing 2022 revenue and profits to 2021, the majority of locksmiths reported slight or significant increases.

### Installations

**26 LCN 6400 COMPACT**  
The ease of installation makes this automatic door operator a great product for locksmiths. It's lightweight and easy to install. Start by making sure the entire opening is in good repair and that an LCN 4040XP door closer is installed properly.

### Commercial/Residential Hardware

**36 AN ORDERLY TRANSFER OF POWER**  
Electrified hinges are key to bringing power from the frame to the lock, no politics involved. Locksmith Ledger interviews Marray's Raymond Zehrung to learn more about power transfer hinges, electric hinges and pivots. We also look at products from Marray, SDC, Hager, Select, ASSA ABLOY and ABH.

**46 IN THE FIELD: PADLOCKS**  
Padlocks can be a point-of-purchase sale in the lockshop or part of a security plan for remote locations. Options range from standard combination locks to rekeyable models to smart electronic padlocks.

**50 FRONTLINE DEFENSE**  
Preventing attacks and by-passes on aluminum storefront doors can be achieved in less than one hour by installing the Frontline Defense interlocking full-length latch guard.

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## Electronics & Access Control

### 44 ELECTRONIC HARDWARE MOTORS AHEAD

New motorized products provide several advantages over solenoid. Motors are energy-efficient, generate less heat, operate with less noise and bring cost savings, because power supply requirements are reduced.

## Automotive

### 54 VEHICLE ENTRY IN 2022

Side-impact and rollover standards forever changed the game for locksmiths. No longer are locksmiths armed with an assortment of car-opening tools. Instead, Original Lishi picks are often the tool of choice. The only other option is attacking the lock operator inside the vehicle.

## COLUMNS

8 Editorial

66 The Back Page

## DEPARTMENTS

58 News Briefs

58 People in the News

60 New Products

61 Calendar of Events

62 Market Place

63 Hot Spots

63 Classifieds

65 Index of Advertisers

### LOCKSMITH VAN CONTEST

It has been more than 20 years since Locksmith Ledger's last locksmith van contest. It's time to bring back this fun event and see what's changed in the past two decades.

Our contest will be judged in the following categories:

- Best Exterior
- Best Interior Storage
- Best Interior Workspace
- Best Innovation
- Best Overall

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#### State of the Industry:

Locksmith Ledger analyzes the results of our survey of qualified subscribers to paint a picture of the forces that affect North American locksmiths and security pros and quantify those effects on market performance. Subscribers can download the full 2022 report at [locksmithledger.com/21281595](http://locksmithledger.com/21281595).

#### Know Your Distributor 2022:

Looking for a locksmith distributor in your area that sells electronic access control and has overnight shipping and online support? Download the Know Your Distributor 2022 guide in PDF format at [www.locksmithledger.com/21260478](http://www.locksmithledger.com/21260478).

#### Year in Review:

We list our top products and articles from 2021 based on Google Analytics reports of our readers' clicks. Next month, we'll release our 2022 list. Find our 2021 top products at [www.locksmithledger.com/21244218](http://www.locksmithledger.com/21244218). Access our 2021 list of most-read articles at [www.locksmithledger.com/21252156](http://www.locksmithledger.com/21252156).

#### Calendar of Events:

Looking for a security industry event to attend? Our Calendar of Events lists upcoming in-person and online educational opportunities. View them at [www.locksmithledger.com/events](http://www.locksmithledger.com/events).

#### Online Buyers Guide Updated Daily:

Want to know whom to contact in more than 200 specific product categories? You also can use our comprehensive Online Buyers Guide to connect with manufacturers and distributors that serve every niche of the security market. Search for individual products by company or product type. Visit [www.locksmithledger.com/directory](http://www.locksmithledger.com/directory). Manufacturers and distributors that serve the industry can update their information here: [cygnuscorporate.wufoo.com/forms/zlc3m3r17mbsp4](http://cygnuscorporate.wufoo.com/forms/zlc3m3r17mbsp4)



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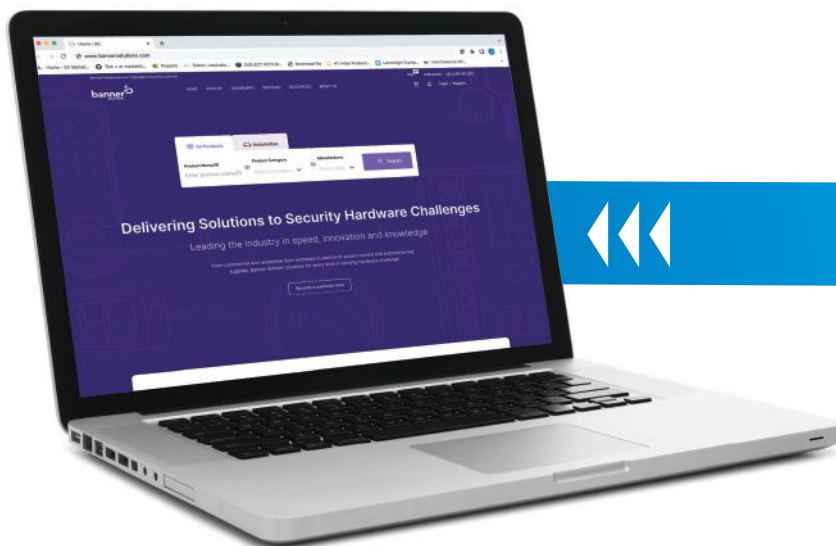
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# The Ledger is Calling All Locksmith Vans: Show Us What You Got!!

When I assumed the role of publisher at Locksmith Ledger in 1993, things were a little different at our company. There were more than 100 technical titles and “how-to” books in our inventory. We offered locksmith bonds and patches, and of course, our famous LedgerWorld national tours.

Perhaps the most fun we had back then, though, was our highly anticipated Readers’ Van Contest. The rules were simple: We solicited the most unique and stylish — and yes, functional — locksmith work vans from our readers, and our panel of judges selected the winners in various categories.

We thought resurrecting the van contest would be something you folks might enjoy participating in. So here we go. The **2023 Locksmith Ledger Van Contest** is reborn!

It has been more than 20 years since Locksmith Ledger’s last locksmith van contest. It’s time to bring back this fun event and see what’s changed. For many locksmiths, your van is your office, retail showroom, workspace, storage unit and break room — all rolled into one. It has to work well for you, with power, lighting, inventory, key machines and easy access to any tools you might want. We look forward to seeing everyone’s great ideas.

So here are the ground rules. Our contest will be judged in the following five categories:

**Best Exterior** – We’ll look at appearance, making sure that the van looks well-maintained and in good condition, that any wrapping or other advertising is accurate, clean and clear to the viewer and that the overall appearance is eye-catching.

**Best Interior Storage** – We’ll look at the organization of this area, that it’s well-kept, secure and designed for finding the right tool or part in a hurry.

**Best Interior Workspace** – We’ll look at the layout, making sure it’s adequate to perform necessary tasks, such as pinning or cutting keys, as well as the appearance of the area.

**Best Innovation** – We’re seeking anything, exterior or interior, that’s unique and adds to the overall function of the work truck.

The judges will select a winner in each category. Then a point system will determine the overall winner. Prizes will be awarded, and the best vans will be featured in an issue of Locksmith Ledger magazine.

The contest is open to commercial and mobile locksmiths only; one entry per business; no cost to enter, as in FREE. The deadline to enter is Nov. 15. Contestants must include their name, name of business, location and contact information, at least one exterior and two interior images and a short description of why they designed their truck the way they did. To enter, please go to [cygnuscorporate.wufoo.com/forms/m4ltqo31mcqc2m](https://cygnuscorporate.wufoo.com/forms/m4ltqo31mcqc2m) or scan the QR code.



THE TECHNICAL RESOURCE FOR THE PHYSICAL &amp; ELECTRONIC SECURITY SPECIALIST

## LOCKSMITH LEDGER

International

PUBLISHED BY ENDEAVOR BUSINESS MEDIA, LLC



331 54th Ave N  
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VOL. 82, NO. 11

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**Subscriptions:** One-year subscription prices (13 issues): U.S. 1-year \$49 – 2 year \$75; Canada 1-year \$58 – 2 year \$103; all other countries 1-year \$78 – 2 year \$134, payable in U.S. funds, drawn on U.S. bank. Call: 888-556-2272. Single issues available \$10 prepaid. Single copies Locksmith Ledger International Security Register, \$15 prepaid. Canadian GST #R42773848. Printed in USA. Copyright 2022 Endeavor Business Media, LLC.

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# Roundtable: The Future Is Bright & Electronic

Supply-chain issues have pushed locksmiths to diversify and become more adaptable.

**I**t's been nearly three years since the word "COVID" became a regular part of our lexicon.

In 2022, even though the pandemic itself for the most part plays out in the shadows of the general public's attention, its effects continue to be felt and remain squarely in the spotlight through supply-chain problems that have forced up prices everywhere.

It's in this backdrop that Locksmith Ledger recently discussed where the security industry stands as we wind up 2022 and how locksmiths can navigate their future course with top players in the industry.

Our panel includes Joseph Kingma, general manager of Medeco Security Locks and ASSA, which are part of ASSA ABLOY Opening Solutions Americas; Alex Houston, president of dormakaba Americas; Beau Edelen, vice president of locking solutions for Wesco International; and John Truempy, ICML, CRL, LSFDI, CMIL, IFDI, CFL, who is employed at the University of Pennsylvania, where he's been a

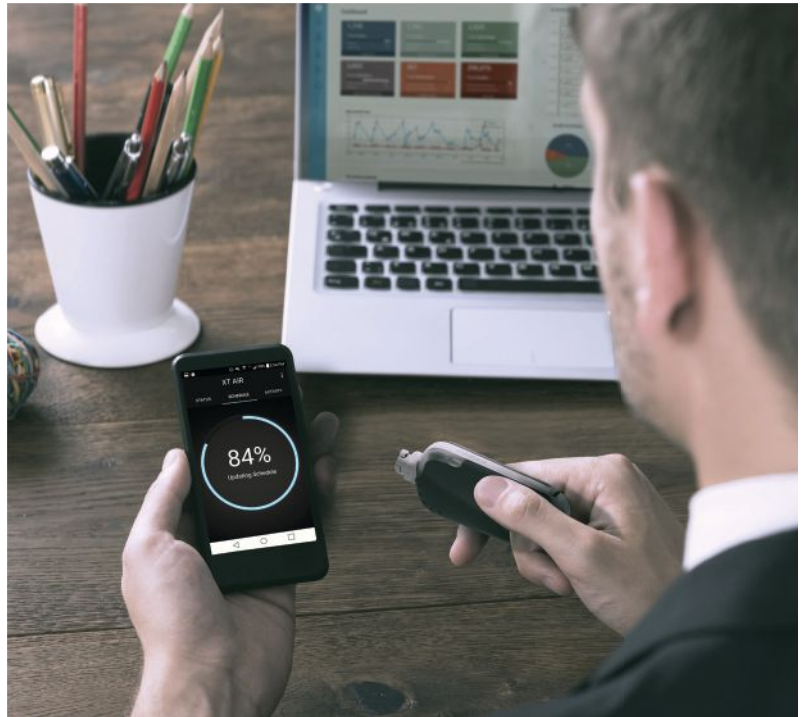


Image courtesy of Medeco

» Electronic locking and monitoring have become increasingly important.

locksmith since 1992. Truempy also is the first president of ALOA Institutional Locksmiths (AIL).

**Q** With COVID fading from public concern, it seems supply issues became the big story in the security market in 2022.

**How much has the breakdown of the supply chain affected the industry, and when do you believe that the situation will be resolved?**

**Joseph Kingma:** No industry has been immune to the pressures of the post-COVID supply-chain challenges, although many organizations have been able to navigate around them to varying degrees. The security industry is no exception, with challenges that range from slow availability of raw materials, components, shipping delays and ongoing cost challenges. These have resulted in larger-than-normal backlogs at every step of the manufacturing, distribution and installation process. This has resulted in extended project timing and, in some cases, product trade-offs where timing has been critical.



"Although many electronic components remain in short supply, many of the other issues are less extreme than last year. However, the supply chain remains fragile at best, with unanticipated 'flare-ups' occurring throughout."

Joseph Kingma, general manager of Medeco Security Locks and ASSA

Although many electronic components remain in short supply, many of the other issues are less extreme than last year. However, the supply chain remains fragile at best, with unanticipated “flare-ups” occurring throughout. Many manufacturers are being forced to redesign products or identify alternate components to be more responsive to these supply-chain issues.

I believe we will continue to see these throughout the coming years based on ongoing and emerging political, economic and social uncertainty globally. Manufacturers will continue to refine their products and supply-chain skills to offset these challenges, which might provide some relief.

**Alex Housten:** The external headwinds affecting the global economy are evident. Simply pick up a newspaper or turn on the news. There’s no shortage of information about the macroeconomic trends and conditions that affect the industrial base of the world. The security industry is part of that. The operating environment is challenging, with supply-chain and labor shortages, freight delays and scarcity of critical electronic components, just to name a few.

At dormakaba, we’re fortunate to have an incredible team, not only here in the Americas but across the globe, who have come together to help us to navigate this difficult environment. So far, we have been successful. We invested in additional finished-goods inventories and raw-materials stocks to protect our customers from experiencing extreme delays in deliveries.

And we’re focused on continuous improvement in the management of our supply chain. Our customers put their trust in us to deliver, but they also understand that sometimes we must make commitments, and when we do, they know that our team works diligently to pull orders back in. We don’t have a crystal ball, but we continue to monitor for potential risks and carefully manage mitigation plans to adapt to changes in real time.



» Mobile credentials, such as dormakaba’s BlueSky, are expected to continue to expand.



“There’s a tremendous opportunity for today’s locksmith to position themselves as a valued partner by providing professional assistance to help customers to determine and employ new ways to make facilities safer and healthier.”

Alex Housten, president of dormakaba Americas

**John Truempy:** Supply-chain problems have been odd but a real problem. I think it hit the electronics end much harder than the nonelectronic side. I waited more than nine months for some electronic products, but for products such as cores, keys and locks, I also had more options. You just can use a different finish to get a job done and then go back and change it later after the right product arrives.

I hope this will be a learning moment for the industry. On-demand manufacturing might save money, but it also might lose you a job to a competitor.

**Q** What does today’s locksmith have to do to put themselves in a good place in this market, today and in the future?

**Kingma:** At the macro level, locksmiths must offer even more-comprehensive security advice and products than ever to meet increasing security demands. I believe we will see new collaboration between companies just to expand geographic and intellectual reach. This increased scope will require more focus on product training and required certifications, which will become more difficult in the current labor market, where many struggle to maintain adequate staffing. More-creative HR policies and compensation plans likely will be required to offset this labor challenge, which might strain the status quo of historic business practices.

Although this sounds daunting, locksmiths might consider outside management or human resources consulting firms for new perspective and fresh ideas to assist, because the human resource already is emerging as the greatest constraint to growth.

At a micro level, I maintain what I have offered for many years: Our customers have a choice and now are armed with more information from online sources, with varying degrees of accuracy, than at any other point in history. As a result, today’s locksmiths have to provide accurate and objective counsel on the problem that the customer is trying to solve.

They have to work hard to understand the problem, help customers to understand what options are available and the trade-offs and help them to make the right decision for their business. This doesn’t necessarily mean giving the customer exactly what they’ve asked for.



“Locksmithing won’t go away, and neither will mechanical keys and hardware, but there’s a megatrend toward electronic and automated solutions.”

Beau Edelen, vice president  
of locking solutions for Wesco International

Then, service must be exceptional. Professional appearance, interactions and installation results are a must. In this hyper-competitive market, even the smallest details matter.

**Housten:** There’s a tremendous opportunity for today’s locksmith to position themselves as a valued partner by providing professional assistance to help customers to determine and employ new ways to make facilities safer and healthier. This can create a consultative and recurring service revenue opportunity for the locksmith industry. We can summarize that in three areas:

- Provide professional assessments. Conduct an assessment with access solutions supplier experts and building operators to identify a comprehensive, scalable upgrade plan that includes low-hanging fruit and investment-level options.
- Choose the right solutions. Choose suppliers who provide true turnkey firmware, hardware, software and training, including how the locksmith can work with customers to make sure the system performs as expected. These providers should be consultative partners who work directly with locksmiths on each project from start to finish.
- Invest in training. It’s easy to fall back on existing solutions, but today’s competitive marketplace demands that security pros stay up to date on the latest advances to be the best they can be. Much of this training is free or offered on scholarship. Manufacturers provide a variety of in-person and digital training programs. In addition, tech updates from manufacturers, trade media, trade events and trade memberships can help locksmiths to become security service providers of choice today and tomorrow.

**Beau Edelen:** Diversify or specialize. Locksmiths today offer far more solutions than they did 10 years ago, and that’s a good thing. Most commercial locksmiths offer multiple technologies to their clients, such as EAC, video surveillance, doors and frames, and some have gotten into automation. The days of focusing purely on mechanical hardware and keys might be coming to an end.

Conversely, a lot of locksmiths find great success in specialization. Learn something, get really good at it and provide that service to a wide market. We’re seeing this in safes and particularly automotive locksmithing, where the technology moves quickly.

Another form of specialization could be focusing on a vertical market or customer type. We have customers who focus solely on multifamily-housing solutions, government work or national accounts. Find a sweet spot and lean into it.

**Truempy:** In general, locksmithing is in a great place. When the economy is down, crime goes up. That leads to more demand for security. All we have to do as an industry is to not sell a product but sell security. You can’t watch the local news and not want more security, so the sales pitch is made before the public talks to us.



**What product segment or segments had the biggest effect on the industry in 2022, and will those continue to affect the industry?**

**Kingma:** We continue to see a shift toward more use of electronic locking and monitoring products further within a facility as the necessity for accountability increases and the costs to implement come down. This, in many cases, replaces the historical reliance on mechanical key systems for day-to-day access — although care should be given to ensure an adequate key system for override — and enhances a manager’s access to actionable data for better security and accountability.

For end users, this change gives them more control over access rights and increased flexibility to change the same quickly. For channel partners, this accelerates the demand for highly



» Door operators, such as the Norton 6200, are expected to be a good product for locksmiths.

trained or certified employees while adding reputational risk to those who aren’t able to keep up.

**Housten:** The demand for technology integrations and partnerships to create smart spaces has come to the forefront of our industry and will continue to accelerate. Access solutions are the necessary core of today’s intelligent buildings across all verticals. Efforts to enhance safety, security, efficiency, use and convenience generally rely on the fundamentals of access solutions to determine who goes where, when they enter and exit, and how they move from space to space. The pace of mobile adoption is helping to drive this trend as people demand more control of their everyday living and working environment from their phone.

We’ve seen significant growth in adopting a mobile experience in the hotel industry. Before the pandemic, hotels were much slower to cycle out their locks, and many existing locks weren’t mobile-compatible. Today, it’s pretty much a guest



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“There’s a lack of people in general, and quality people are even more difficult to find. You can’t do a job if you can’t staff it. You can’t upsell the security if you can’t handle the job at a lower level.”

John Truempy, ICML, CRL, LSFDI, CMIL, IFDI, CFL

requirement that a hotel will have a mobile solution. As a result, hotels continue to rush to bring a mobile experience to the door.

**Edelen:** We have seen an uptick in locksmiths embracing low-voltage security solutions, including video surveillance and electronic access control, as well as automatic door operators. With touchless access becoming an expectation of the consumer and building owner, we believe this trend isn’t likely to slow.

Another trend we’ve noticed this year surrounds key management. This might stem from the COVID-19 shutdowns across the country in 2020, but it seems that end customers are becoming more aware of the importance of key management, key storage and mechanical-key replacement with electronic solutions in some cases.

**Truempy:** The biggest segment is people. There’s a lack of people in general, and quality people are even more difficult to find. You can’t do a job if you can’t staff it. You can’t upsell the security if you can’t handle the job at a lower level. It isn’t just our industry with “Help Wanted” signs all over, but we have to have certain types of people. That makes it even more difficult.

So, it isn’t a segment, such as electronics or patented keys, that will be the leader. It will be the people, or lack of, that will have a big effect.

**Q** What’s your view of the security industry five years from now? How does the locksmith fit into that vision?

**Kingma:** The integration of security devices will continue to accelerate toward a single user interface for more seamless security coverage. End users no longer will have disparate systems in which to work; rather, they likely will manage an entire security “ecosystem” from a single portal. I believe system management of electronic and mechanical systems will merge and be seamless, with more focus on the credential-holder as the system nucleus instead of the credential or the opening.

This will require more behind-the-scenes complexity in installation and troubleshooting, so it will force locksmiths to keep up.

**Housten:** Five years from now, the security industry will be even more digitally and mobile dependent, but mechanical locks will remain in use, particularly in legacy installations that might not have the budget or security impetus to change.

Professional locksmiths are problem-solvers who rely on



Image courtesy of Adams Rite

» Qualified workers will continue to be in high demand.

detective skills and a vast encyclopedia of personal knowledge. Their job is to keep doors in working order. There always will be a demand for locksmiths, but for the industry to grow and locksmiths to be seen as the security pros they are, they’ll have to adapt to a changing marketplace.

This includes going beyond the norms of working with mechanical hardware, electronic access control, alarms and video systems. It now includes low-energy operators, touch-free access devices and electromechanical door hardware that works in conjunction with these systems. They will have to invest in personalized training to maximize expertise and advance career opportunities.

**Edelen:** Locksmithing is an industry that has many seasoned professionals in or nearing retirement age, so change is inevitable. Locksmithing won’t go away, and neither will mechanical keys and hardware, but there’s a megatrend toward electronic and automated solutions.

I see the progressive locksmith essentially as a security integrator who can provide more through their mechanical expertise. I also see a real blurring of the lines between locksmiths and integrators. Locksmiths are positioned uniquely to capture that electronic security spend, keep and grow their core mechanical offering and add in new technologies as it makes sense for their markets. This could be a renaissance in the industry, but only if locksmiths are willing to evolve, learn and take chances.

**Truempy:** Five years from now, we will be booming. An old name from the *Ledger* — Bill Reed — once showed me a chart, and it was the economy on one line and industry sales on another. They followed the same pattern, but the sales line was delayed in time. Because the economy isn’t going to just become great tomorrow, we have good years ahead. That was 20-plus years ago when he showed it to me, and I have witnessed it over and over: 2008 happened, and it’s happening now. ■■

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## The Locksmiths' Perspective

The purpose of this comprehensive Locksmith Ledger report is to paint a picture of the forces that affect North American locksmiths and security pros and attempt to quantify those effects on market performance.

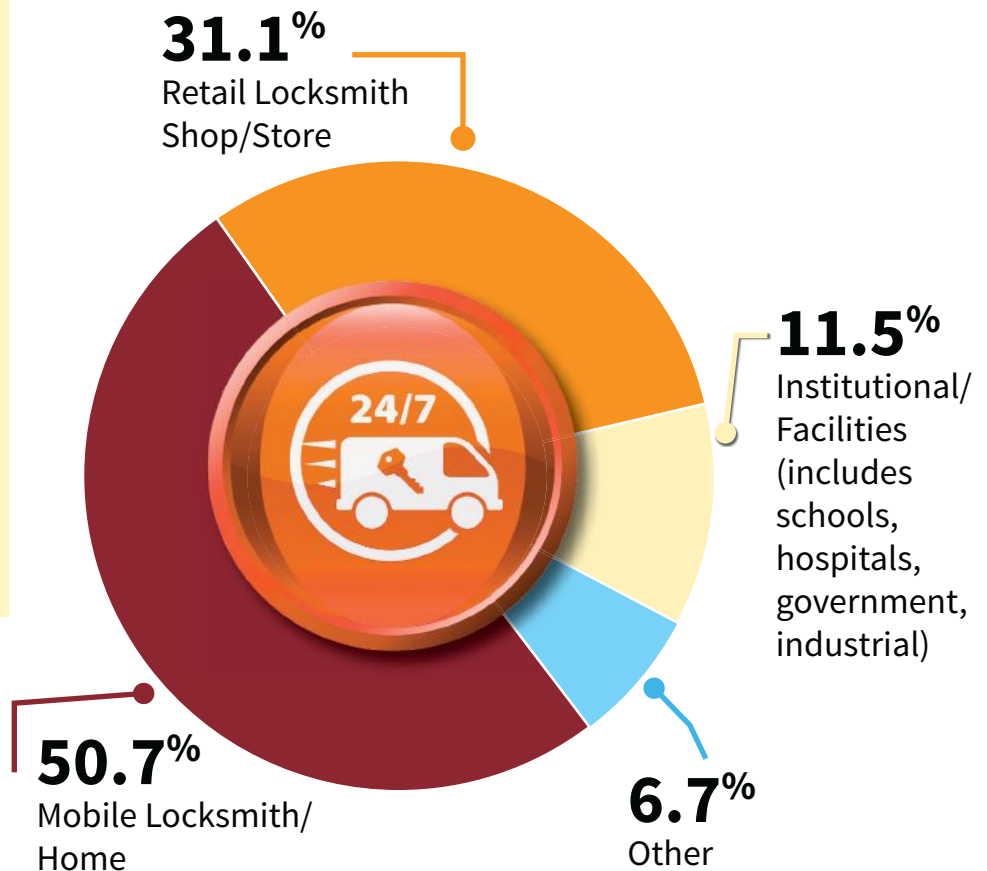
This survey was delivered to qualified

professionals who subscribe to Locksmith Ledger International. We tabulated the responses from the 225 qualified respondents who participated in this survey. A more complete version appears online for subscribers at [locksmithledger.com/21281595](https://locksmithledger.com/21281595).

## Respondent Business Profile

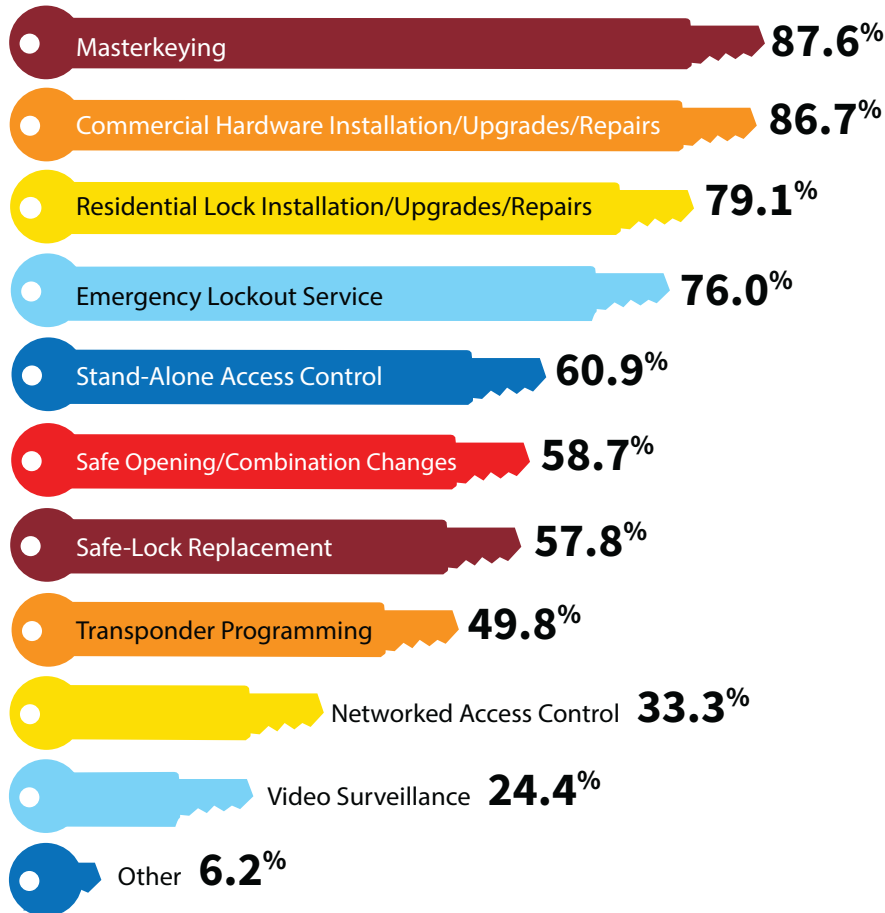
### Locksmiths Still Going Mobile

The largest percentage of locksmiths who responded to our survey are those who self-identify as mobile locksmiths (50.7), followed by 31.1% who self-identify as owning a retail shop, although several say they have a shop and are mobile. In all, 83.6% of respondents are classified as working in a private business. The remainder are employed by institutions or in the supply chain.



## Professional Services

Respondents were asked to name the services their business provides. They were asked to select all that apply, so the sum won't add up to 100%.



# STATE OF THE INDUSTRY 2022

## Being Handy

Locksmiths have had to perform many tasks — all of them well to ensure future business.

Based on our survey, most still perform many tasks. Nearly half of all respondents (47.1%) say they perform at least nine of the services listed, and 77.8% say they perform at least half.

Unsurprisingly, traditional locksmith roles, such as masterkeying (87.6%) and performing emergency lockout service (76.0%), rank high, while newer high-tech services, such as providing networked access control (33.3%) and video surveillance (24.4%) rank low.

Although there probably always will be a demand for emergency lockout service, we expect these numbers to converge slowly as keyless options continue to proliferate. Competitive pressure also could be behind the change as demand for higher tech security measures increases.

“We’re butting heads with competitors that are national in scope,” says Glenn Younger of Grah Security in San Diego. “Converging people are saying, ‘Yes, we can do video,’ so if existing customers are saying, ‘We’re talking to the new folks, and they can do video,’ we [have to be able to] say, ‘We can do video, too.’”

One school of thought is that because of so much crossover, locksmiths can stand out from the competition by specializing. Such a strategy seemingly is in the early stages, because only 8.0% say they perform no more than two of the listed services.

“We get lots of calls for safes, so I would like to eventually gain the knowledge to master them.”

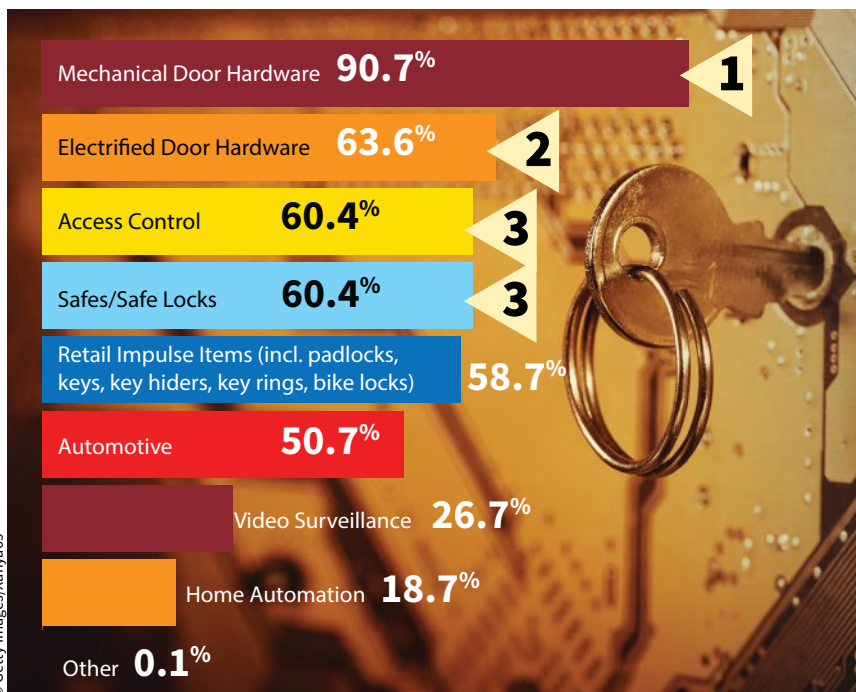
“Whatever comes up.”

# STATE OF THE INDUSTRY 2022

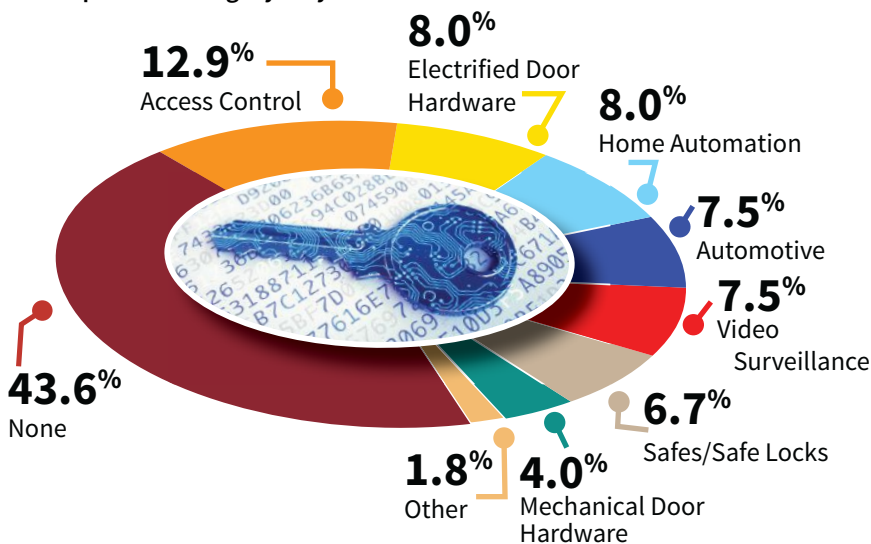
## Business Product Segments & Selection

Respondents were asked the following questions about their product lineup. In the first question, they were asked to select all that apply, so the sum won't add up to 100%.

What product segments does your company sell?



What product category do you most want to add?



## Powering Up

Make no mistake: Mechanical locks and keys aren't going anywhere. Mechanical door hardware remains, as it has for the past two years, the dominant product category among our respondents, with more than 90 percent saying they stock mechanical hardware, in line with past reports.

Nevertheless, recent reports suggest that sales of electronic smart locks will overtake the sales of mechanical locks by the end of the decade, and respondents would seem to confirm that opinion.

Electrified door hardware as a product offering continues to gain ground — the only category that has increased each of the past two surveys. Nearly two-thirds of our respondents (63.6%) now say they carry electronic products, such as electric strikes and maglocks, up from 56.3% in 2020. Meanwhile, access control eclipsed the 60% level for the first time in 2022.

Those numbers should continue to increase. Among respondents who want to add to their product mix, 66.1% name an electronic category, up from 61.7% in 2021, with access control leading the way.

One category that will continue to be interesting to keep an eye on is home automation. Even though it brought up the rear among product categories that respondents sell, it showed a healthy increase over 2021. Plus, a big development during 2022 was the release of the Matter standard and the announcement of the first Matter-compatible locks. Matter is a standard meant to increase interoperability of smart-home products, including security products, such as locks.

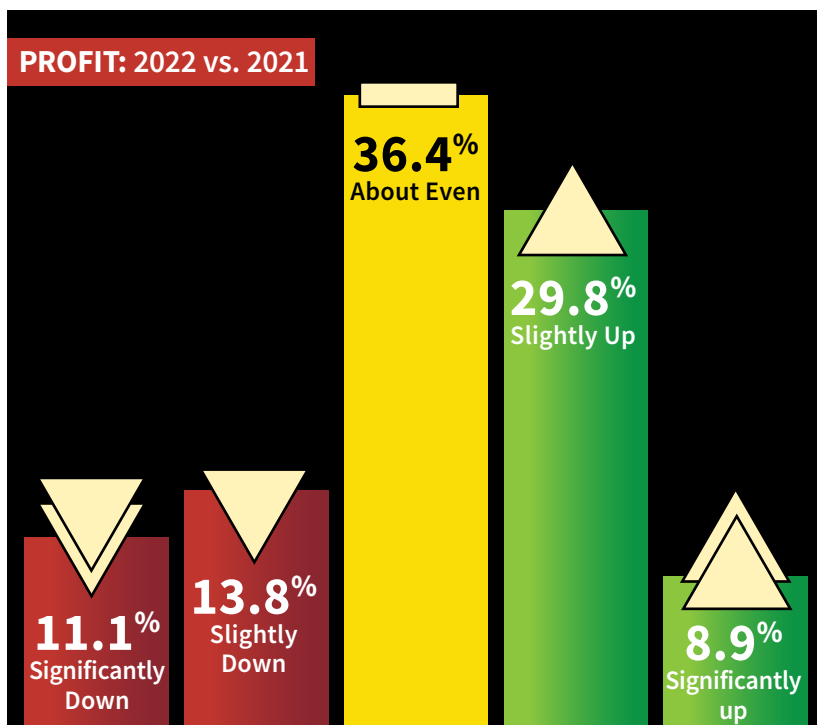
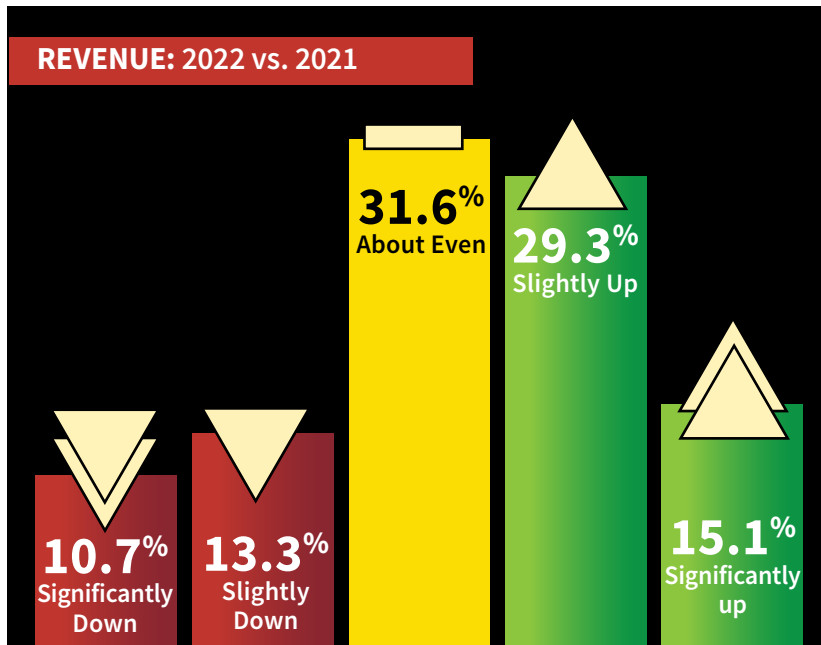
Based on the involvement of tech's biggest players — Amazon, Apple, Google and Samsung — Matter could matter a lot to locksmiths in the residential market.

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## Revenue & Profit Trends

Respondents were asked how 2022 revenue was trending compared with 2021 numbers as well as how profit was trending during the same period.

# STATE OF THE INDUSTRY 2022



### Proving the Adage

An adage of the security industry is that it's recession-proof: When times are good, people want to protect what they have, and when times are bad ... people want to protect what they have.

2022 has been a rough year economically for many sectors as well as for the public. For a variety of reasons, including continued backlogs in the supply chain, prices jumped faster in 2022 than they had in decades, bringing the specter of economic recession.

However, one respondent notes with respect to price increases and supply-chain issues that "COVID was the business killer."

The majority of respondents would seem to agree that for all its challenges, 2022 was a better year financially for locksmiths overall than 2021.

Only 24.0% of respondents say their 2022 sales are down more than 1% compared with the previous year. In 2021, 34.8% said the same thing, and a horrific 56.8% reported a sales decrease of more than 1% in 2020. Further, only 10.7% say their 2022 sales are down more than 10% compared with the previous year, which is a decline from 19.3% in 2021 and 35.3% in 2020.

Profit percentages were in line with revenue figures. Less than a quarter of all respondents (24.9%) say their 2022 profits are down more than 1% compared with the previous year, and only 11.1% report a decrease of more than 10%. That represents declines of 10.9 percentage points and 8.2 percentage points, respectively, from 2021.

# STATE OF THE INDUSTRY 2022

## Business Challenges for Locksmiths

Respondents were asked about the biggest challenges to their business in 2022. They were asked to select their top three challenges, so the sum won't add up to 100%.



### Difficulty Ahead

Although COVID faded from public consciousness for the most part after the lifting of nearly all mandates, its effects continue to be felt by more than just those whom the coronavirus infects. The security industry hasn't been immune in this respect.

COVID lockdowns of 2020 that affected manufacturing and transportation have carried over. As a result, raw materials and electronic components necessary to make locks and other security hardware have become difficult to come by. That, as well as a spike in the price of petroleum, which affects the price of everything, has led to general inflation.

Those two interconnected issues are at the top with respect to posing challenges to locksmiths during 2022.

Nearly two-thirds of our respondents (64.9%) note

product delays as a top challenge, while 57.3% tab controlling costs as one. Both results represent increases of almost double the percentage of respondents who included them among their top challenges in 2021.

"We've had to change several of our processes to be more diligent, more specific on all costs, down to every price on every piece of hardware that we buy," says Chad Lingafelt, managing partner of Loc-Doc Security in Charlotte, North Carolina, about controlling costs.

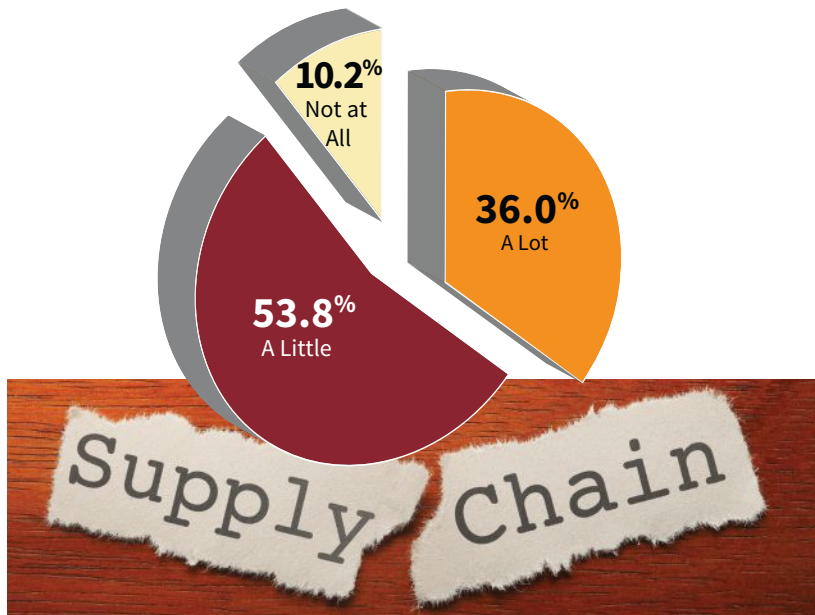
As for the challenge of product delays, Younger says, "That's definitely in there. We've had our first couple of 45-, 50-week lead-time quotes. I was like, 'What? Really?'"

Some locksmiths would take a 45-week, or 11-month, delay. One respondent notes an 18-month quote for a part.

## Supply-Chain Effects

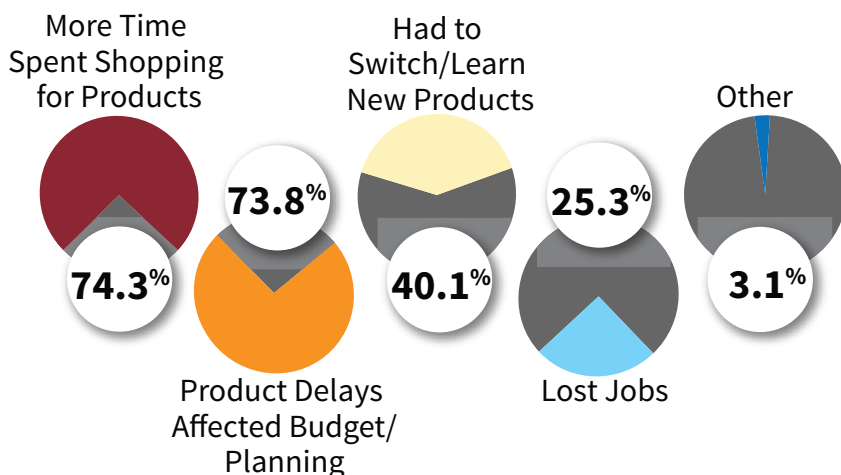
Respondents were asked the following questions about the effects of the supply-chain breakdown. In the second question, they were asked to select all that apply, so the sum won't add up to 100%. NOTE: Because 23 respondents said backlogs had no effect on their business, the percentages in the second question reflect those where it did.

How much have supply-chain backlogs affected your business?



© Getty Images/DNY59

In what ways have supply-chain backlogs affected your business?



© Getty Images/urzine

# STATE OF THE INDUSTRY 2022

## Chain Links

Supply-chain disruption has been a major story in the security industry throughout 2022, and it's unsurprising that its effects have been felt nearly universally.

Almost 90 percent of our respondents say backlogs had some effect on their business in 2022, although nearly 60 percent of those say the backlogs actually didn't affect their business all that much.

Although what constitutes "a little" vs. "a lot" might depend on a person's perspective, only 25.3% of our respondents cite lost jobs — and, thus, lost income — as a way that backlogs affected their business.

As one locksmith notes, "Shipping costs made us look elsewhere, and we have lost some jobs while waiting on parts. Then, we get stuck with the bill and no reimbursement from the customer."

Lingafelt, who says product delays have affected his business only "a little," says it affected his company most with respect to project planning, which affected cash flow. He cites the example of a project that involves doors, locks and hinges.

"You have to plan for the longest lead time and then stage everything so it gets here within a short window," he says. "If you got the doors faster [than the hinges], you could be sitting on a large lump sum of cash, waiting on hinges for 12 weeks."

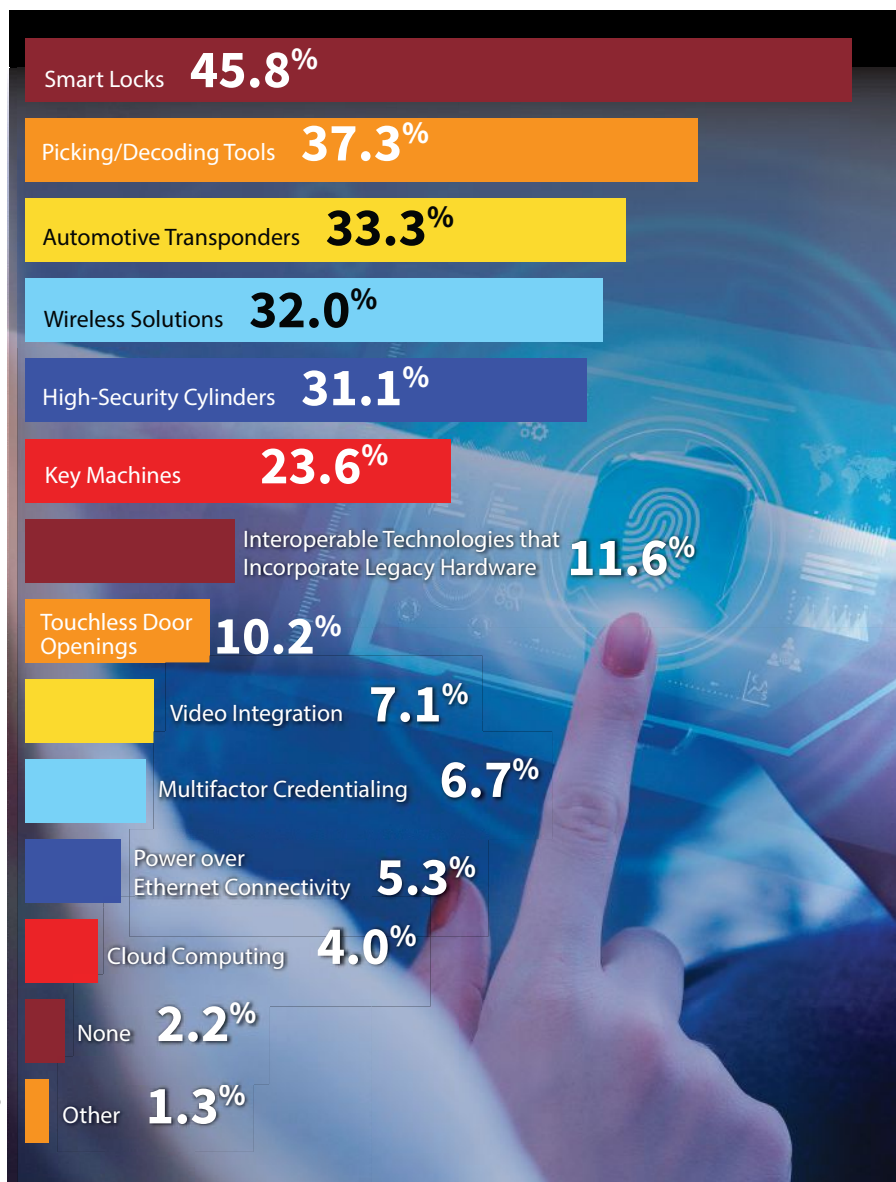
Of course, something that appears to be a mere inconvenience, such as more time spent shopping, can lead to work backlogs eventually.

Delays also can lead to unhappy customers, but only a handful of respondents mention that as a negative effect.

"Customers have been surprisingly patient," Younger says.

## Importance of Technology Advances

Respondents were asked to select the technology or service advancements that were most important to their business. They were asked to select their top three choices, so the sum won't add up to 100%.



©Getty Images/reklamilar

## A Lock on Interest

That sales of smart locks are expected to overtake those of mechanical locks by the end of the decade is no surprise. That's because end users want the convenience of using their smartphone to unlock a door, and building managers want the ability to control access to doors.

A smart lock delivers on both desires.

Naturally, interest in smart locks remains top of mind for locksmiths in 2022. Smart Locks has been the No. 1 technology of interest all three years of our research, and its margin over the No. 2 choice continues to be substantial. We don't expect that to change anytime soon.

As was the case in 2021, four options grouped below the top spot in 2022. These convey a wide range of interests and market demands while including all major avenues of locksmithing — mechanical, electronic, residential, commercial and automotive. Of these, however, high-security cylinders showed a substantial decline in interest, falling two places in our research.

A few respondents say none of the listed choices is of importance to their business, and Lingafelt agrees with that, although he acknowledges that his reason touches on interoperability (and, obviously, smart locks). What's most important to his business is "having products that work and talk to each other, even if they are not from the same manufacturer."

Because manufacturers tend to work only with their own platforms, "an end user, if they're using anything that's app-based, they have to use five or six different apps to do one thing or to use things at their facility."

“What my customers ask for today is most important. Yesterday was different. Tomorrow will be different.”

# STATE OF THE INDUSTRY 2022

## Product Purchase Sources

Respondents were asked about from where they get their products. They were asked to select all that apply, so the sum won't add up to 100%.

Large National Chain Distributors **73.3%**

Local Locksmith Distributors **64.4%**

Online Vendors, such as Amazon **33.8%**

Direct from Manufacturers **33.3%**

Big-Box Stores **24.4%**



©Getty Images/By iylast

## Shopping Around

Consolidation was the big story of distribution in 2021, but actual distribution of products has been the central issue in 2022. Product delays that led to project and, thus, revenue delays and rising prices have been a major concern with locksmiths, and the effects of the supply-chain disruptions can be seen in our data.

Distributors, whether national or local, remain the predominant purchase source in the industry, as in 2021. But more locksmiths are turning to sources seen by some as business threats. More than a third of all respondents (33.8%) say in 2022 they bought from online vendors, and nearly a quarter (24.4%) say they bought from big-box stores.

More than likely, this increase speaks to the difficulty of getting products through typical channels. In fact, the average number of sources that respondents buy products from jumped 12.1% in 2022 compared with 2021.



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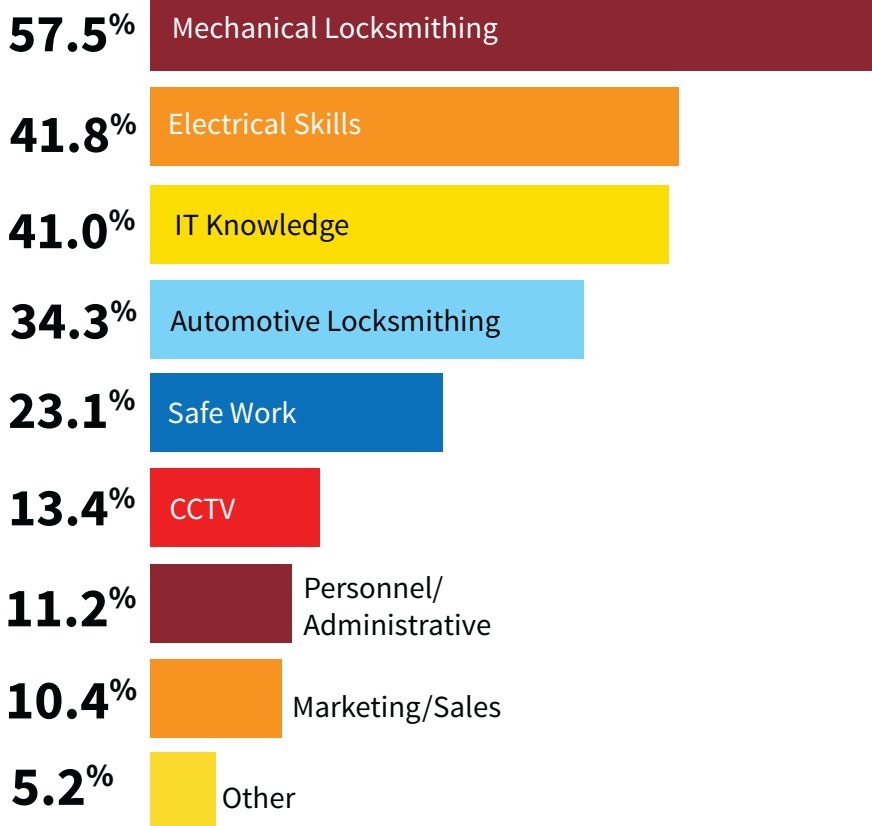
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## Personnel: Hiring & Training

Respondents were asked the following questions about their business with respect to hiring workers and training. In the first question, they were asked to select their top three specialties, so the sum won't add up to 100%. NOTE: Ninety-one respondents said they don't expect to make any hires, so the percentages reflect those who do.

What specialties will you seek in future hires?



## Looking for Help

After three years of surveying locksmiths about the qualities they seek in hires, a clear trend has emerged: Prior experience isn't necessary.

To be sure, it still is desirable. The top trait that employers seek for the third consecutive year is mechanical locksmithing skills, with a majority (57.7%) of respondents naming it among their top three. However, that number is down considerably from 63.9% in 2021 and 77.0% in 2020.

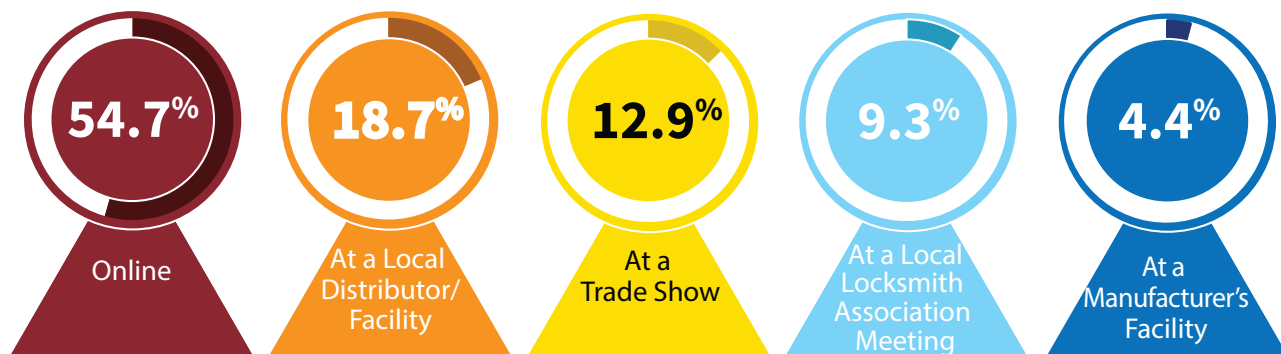
Similar, albeit not as dramatic, declines are seen for electrical skills and automotive locksmithing.

In fact, some employers see prior locksmithing skill as a potential detriment.

"I'm more looking for people with good quality character who are humble, hungry and smart and that we can train them," Lingafelt says. "I prefer not to bring people in that have any specialty skills, because they typically come with a lot of baggage."

As for the preferred method of training — either new or current employees — online remains the dominant choice. For the third consecutive year, respondents prefer online training by more than 30 percentage points over the runner-up option.

How do you most prefer to receive continuing education/training?



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# LCN 6400 COMPACT Installation



» Image 1: The LCN 6400 COMPACT lives up to its name.

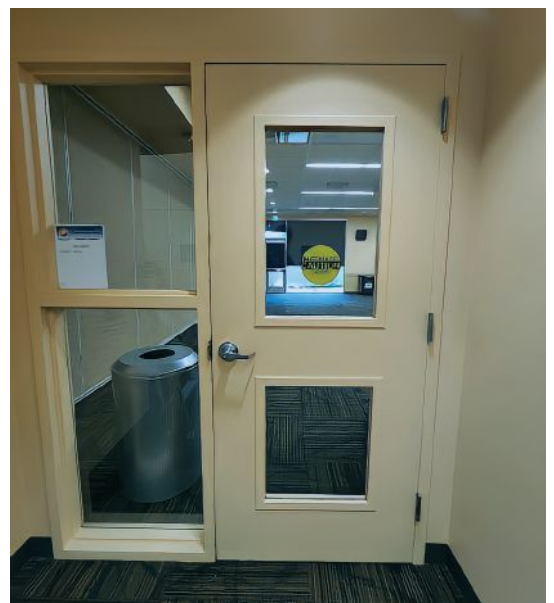
The ease of installation makes this a great product for locksmiths.

With the world moving to touch-free solutions, such as automatic door operators, there's a HUGE demand for skilled installers and easy-to-use products. This is why we believe that the LCN 6400 COMPACT automatic door operator is such an amazing product. (Image 1)

We recently installed one and found that it's lightweight and easy to install. It also is the only door operator that literally slips right onto an existing door closer! This saves space, time and money for all parties involved. In the fast-paced and instant-gratification world we live in, Allegion really hit the nail on the head with this product, and we can see why it has won awards.

## Check the Closer

If you install a 6400 COMPACT, the first thing you have to do is confirm that you have a good, healthy door and opening as a complete package to apply the operator. If you fail to confirm this step and install an operator



» Image 2: The door where we installed the LCN 6400 COMPACT was in good working order.

or closer on any door that isn't in good, working condition, you'll have constant warranty problems later.

Make sure you have a solid door and frame that isn't bent, warped, rusted or loose. Hinges must be tight and adjusted properly — making this an ideal time to offer a continuous hinge if the door has bad hinges — and the door must be capable of handling the operator. (Image 2)

The next thing you must confirm is that the door has an LCN 4040XP door closer installed properly, because the 6400 COMPACT requires one for operation.

If the door has the right closer, you have to doublecheck all measurements to confirm that it is, in fact, mounted per factory specs. Please don't skip this step, because the added stress of the motor-driven operator will destroy the operator and the door. I can't say this loudly enough: NEVER TRUST ANOTHER INSTALLER'S WORK! It's your responsibility to make sure the closer is installed properly before you add an operator to the equation.

After you determine that the door is ready to accept the upgrade, block off your work area with orange cones and caution tape. You never can be too careful! (Image 3)

I also want to take a moment to caution those who aren't savvy with wiring or who simply don't have much experience or training to consult a professional who specializes in wiring. Also, check your local and state laws to see whether a low-voltage license is required to perform this type of work. If so, DO NOT attempt to wire up your operator.

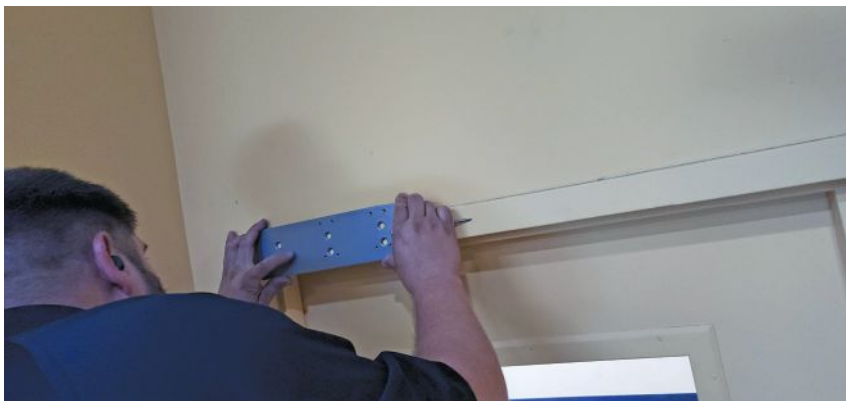
I know my limits, and I hire professional people to fill in where I'm not an expert. For this installation, I worked with John Nolan from Reliant Security who is a wiring specialist.

## Installing the Closer

If your door doesn't have a 4040XP door closer, you have to install one. You first



» Image 3: All kidding aside, it's important to block off your work area to maintain safety.



» Image 4: A mounting plate makes for a better installation.



» Image 5: Pre-drilling instead of using self-tapping screws saves time and energy.

# Installations



» Image 6: The mounting plate is used as a template for the rest of the holes.



» Image 7: The LCN 4040XP door closer. Note the Allen screw that must be turned down all the way before mounting.



» Image 8: The door closer and arm are mounted.



» Image 9: Attaching the arm to the closer completes the installation of the door closer.

must decide whether you will do a parallel mount or a 90-degree-angle mount. We used the latter for our installation.

The next step will be to attach the mounting plate. Using these mounting plates will give you enough room to mount the door closer onto the frame and provide a much heavier duty, long-lasting installation. (Image 4)

I always use a slightly smaller drill bit to pre-drill the holes rather than rely solely on the self-tapping screws. (Image 5) It's faster and less fatiguing on the body. We used this method to mount the first screw on the mounting plate so we then can pre-drill the rest of the holes. (Image 6)

Now, we measure out vertically where the arm will attach to the door. We mark it out with a center punch to create a divot so the pre-drill stays perfectly on target. Note: You can use self-tapping drill taps to put a 1/4 x 20 thread directly into the door or frame. The taps work extremely well, but you have to be careful. Steel that's more than one-eighths-inch thick probably will break your tap.

The screws that come with the 4040XP are designed to fit flush onto the plate for any application.

When your closer is mounted onto the plate, check the directions and make sure that the Allen-head screw that goes to

the valve on the back of the closer is rotated down all the way. (Image 7) If you miss this step, you'll have to take the entire door closer off and start over. This valve is turned out ONLY for shipping purposes.

Next, attach the arm in its 90-degree position to the door. (Image 8) Keep in mind, this device carries a UL listing ONLY if it's installed with the screws that came with it. This is extremely important, and it's a step that a lot of installers forget. After the arm is attached, we add the screw that pairs the arm mounted



» Image 10: The mounting plate for the 6400 COMPACT is bolted to the door closer.

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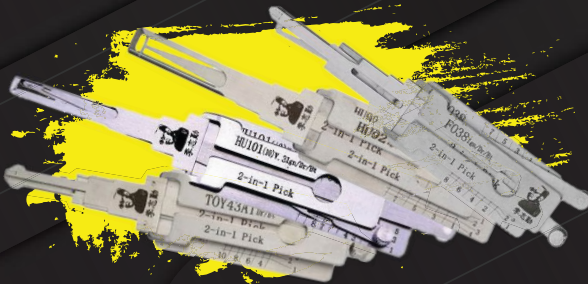
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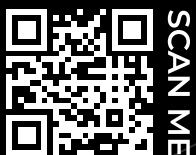
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# Installations



» Image 11: Make sure there's no gap between the closer and the mounting plate.



» Image 12: The 6400 COMPACT is attached to the mounting plate.

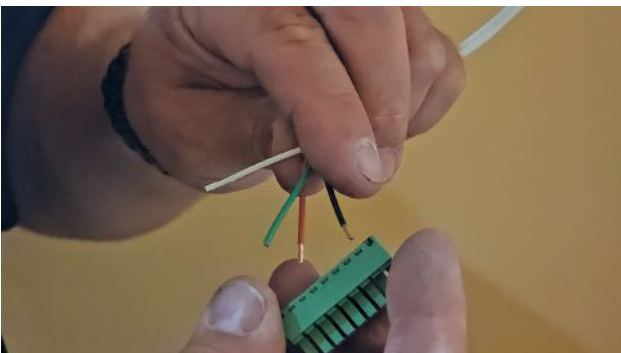
to the door to the closer. (Image 9)

Now, it's a matter of adjusting the preload on the arm. The arm can slide back and forth until you get the proper adjustment. You have to make sure the door closer is adjusted properly. The correct adjustment for closing speed should be seven seconds from a 90-degree angle to completely closed and latched.

Three adjustment screws control this. The back check controls how fast the door opens and prevents wind from catching the door and blowing it out of control. The door sweep controls the door while it closes and is the largest controller of the door. The last and final adjustment is the latch speed. As the door comes to the last 20 degrees or so of closing, there has to be a little extra force to get the door to latch and seat properly. If you get this right, it will make the door close nice and smooth and be easy for anyone to operate. If not, the device will wear out prematurely or even injure someone.

## Installing the Operator

To install the 6400 COMPACT door operator, we start by taking the top bolt off the door closer and installing the bolt that goes with the operator. Be careful, because the door will have preloaded spring tension when you remove the screw and arm, if necessary.



» Image 13: Pulling out the terminal block makes it easy to install the wires.

Next, we install the mounting plate for the 6400 COMPACT to the bottom of the 4040XP closer. (Image 10) This is an easy and straightforward task, because they were made to pair together. The main thing you have to do is make sure the plate is mounted in the correct direction and that NO GAP is between the mounting plate and the closer base. (Image 11)

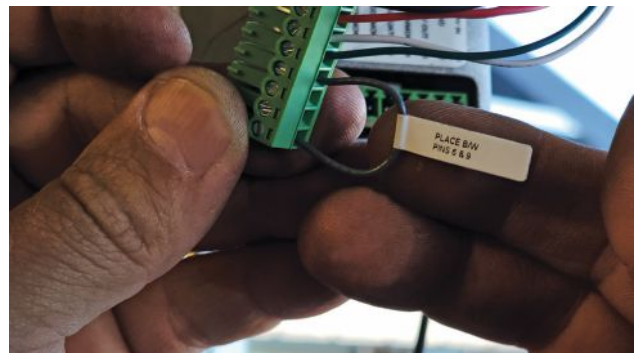
After the mounting plate is attached firmly, you can install the operator. (Image 12) Again, this should be fairly straightforward and easy to accomplish. If you find that the pieces don't fit together well, doublecheck your last step and make sure nothing is backward or upside down before you move forward. The 6400 COMPACT lives up to its name: It's a compact unit that can fit on many applications, including the hallway door where we installed it. Again, make sure there's no space between the mounting plate and the operator.

Congratulations, the mechanical aspect of the job now is complete, and it couldn't have been quicker and easier.

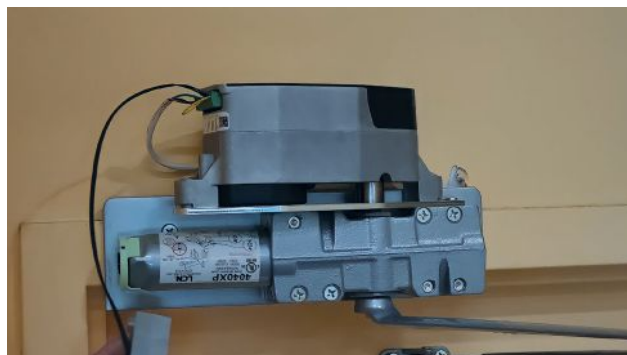
## Powering Up

Now, it's time to wire up the 6400 COMPACT. We start by pulling the terminal block out to access it more easily. (Image 13) After that, you can connect the wires.

Be sure the wires are trimmed properly and prepped for



» Image 14: The terminal fully wired (taken from a different install)



» Image 15: The terminal is reinstalled in the motor housing.

installation. Failure to do this will result in a short or faulty operation. A good rule of thumb is if you can see bare wire after the connection is made, the stripped wire is too long, so you must trim and reinsert. Conversely, if the wire isn't stripped back far enough, it won't make a connection, so you have to find the sweet spot to make a connection but not have bare wire exposed.

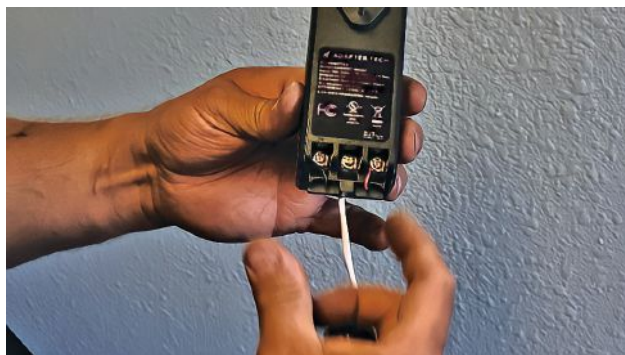
The green wire connects to the No. 5 terminal on the terminal. Next, you attach the jumper, which also might have to be trimmed to not have exposed wire. This install was between terminal Nos. 6 and 9 on our application. (Image 14) The jumper has a tag that tells you where to install it. The motor-enable switch goes between terminal Nos. 7 and 8. This all is labeled clearly on the device and in the instructions, which are available as a download to your phone. You now reinstall the terminal block into the motor housing. (Image 15)

This is where you decide whether you'll run the door operator off the power supply that it came with or tie it into an electronic access control (EAC) system and run power from a power supply station.

The reason you have to know this is if you run an electric strike or maglock to release the door for security, the operator has to communicate with the lock so they don't fight each other. For example, if your door operator isn't wired properly into an EAC system to coordinate the timing of a button push to activate the door operator, the operator will try to open a locked door, because they aren't cohesive. The lock has to unlock to allow the door to open on a secure facility.

We did two different installations, one for a basic installation that had no EAC and one that included an electric strike. The following is for when using the 6400 COMPACT in stand-alone mode only. We'll report on hooking the door operator up to an EAC system in a future issue.

For stand-alone use, the 6400 COMPACT has a transformer that converts 120VAC power to 24VDC at 2.5 amps. (Image 16) **DO NOT TRY TO POWER ANY OTHER DEVICES OFF THIS UNIT!** You simply install two wires to the respective terminals — black on the negative terminal, red on



» Image 16: A transformer converts the power to the door operator.

the positive. We hooked up the power to the motor terminal block before we attached it to the power supply. This was done so it would be impossible to short things out.

You can use the wire supplied with the 6400 COMPACT or low-voltage CAT-6 wire that's rated to take the voltage and amperage the distance necessary to travel from a 120V outlet to the operator. After it's installed, you plug the power supply into the wall. (Image 17) Be sure the wire run from the outlet to the door operator includes conduit or surface-mount wire molding to protect the wire and make the job look clean and professional.

## Final Steps

The wiring portion complete, we now focus on programming and adding the wireless buttons to activate the 6400 COMPACT. Make sure the door is closed and press the calibration button twice. (Image 18) Now, open the door to the angle you want the door to open to. You'll see a blue light that indicates that the angle and desired door swing have been registered. Note: The swing angle will depend on the installation geometry of the closer and how it was installed. We were set at 110 degrees open with our application.



» Image 17: The operator can plug into a simple wall outlet for easy installation.

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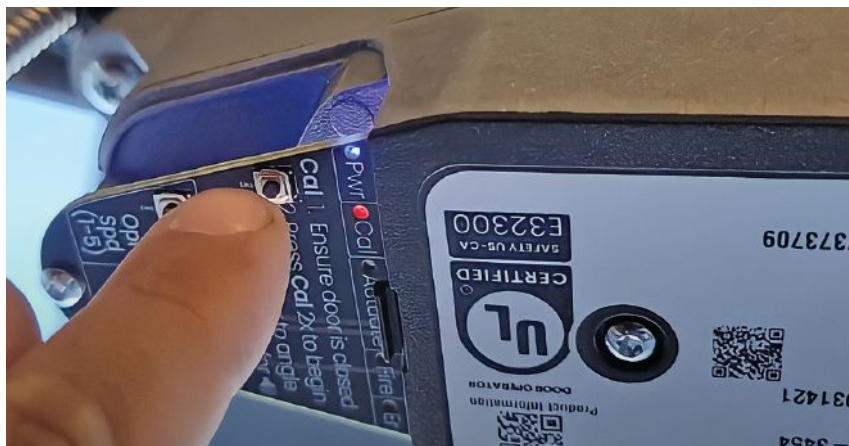
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# Installations



» Image 18: Press the calibration button twice to begin the programming process.

At this point, you can set the opening speed. The 6400 COMPACT has five settings. Choose the one that meets your local and state laws and requirements for the customer. This also would be a good time to make sure that a door loop (the steel cable protector) is affixed securely to the wall and door operator. The loop ensures wires aren't being pinched and stretched or pulling on the connections.

Allegion sells bundles that include actuators, but ours didn't have one. For this, you can use a big Americans with Disabilities Act (ADA) handicap button or a handheld clicker-style button. We used a BEA wireless receiver. Simply

pair the button to the receiver, and you can adjust the delay and hold-open times on this device.

The door now operates on its own and receives a signal from the buttons. This is the time to make sure the door opens and closes at the proper speed and pressure for your state ADA requirements.

Remember, your installation must comply with all local, state and federal codes and rules along with building, fire-code and ADA requirements. Our installation requires 15 pounds of pressure to pull the door open with nonoperator assist. The door opens at a nice, controlled speed, and when closing

from 90 degrees to fully closed, the door takes about 5 seconds to reach the latching position and 2 seconds from latching to closed for a total of 7 seconds.

Here's a tip: If you were to put your hand in between the door and the frame when the door closes, would your hand be injured? I'm not saying stick your hand in the door, but think about young children who interact with the opening. Are they safe? Will the door knock over an older person who uses a walker? Do they have enough time to get inside if they use a walker or wheelchair? Does the door close softly enough to not injure someone in the entry way? Consult your local laws and codes to confirm.

I also highly recommend having your door inspected by the local authority having jurisdiction to get it in writing that your installation is approved. Words mean nothing; paper is proof. I mention all the precautions only so you're able to cover your assets and not get in trouble down the line via a fine or even a lawsuit.

We finally complete the project by installing the cover. (Image 18)

All in all, the 6400 COMPACT is a fantastic product that's easy to install and can deliver a large profit margin when your part markup and labor is charged correctly. Expanding your skillset to include door operators such as this will be a great addition to your company. I highly recommend getting on the EAC train while the market is in demand for qualified technicians. ■■

Wayne Winton is the owner of Tri-County Locksmith Services, located in Glenwood Springs, Colorado. Scan the QR code to watch a video of the installation. The video shows the EAC installation.



» Image 19: One cover conceals the door closer and operator.



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# An Orderly Transfer of Power

Electric hinges make the connection, no politics involved!

**W**hen wired devices, such as key switches, window foil and push bars, came into use, wire transfers began to be mounted onto the door so wires could pass from the frame to the moving door.

The earliest power transfer I recall was the door loop. It was literally a pair of wires that looped from the door frame to the door, and door loops were problematical. The wire would be flexed every time the door opened and closed, and the wear caused power to become intermittent or cease. Early door loops looked unattractive, failed to protect the wires, were subject to vandalism and became snagged on things that passed through the door.

Electric hinges, referred to also as electrified or power-transfer hinges (PTH), were a big improvement as a way to transfer power from the frame to the lock. For power-transfer applications, at least three hinges are used, and the center, nonload-bearing hinge is the power-transfer hinge.

For outswinging doors where hinges will be on the exterior of the opening, removing the hinge pins allows the door to be removed from the opening, so hinges are designed so the pins aren't removable.

Wired pivots are used for aesthetics and on applications where the door might be subject to abuse. I've used wired pivots on storefront-type doors where we wanted to protect the hardware and wiring from vandalism, while providing an essentially invisible installation.

## Wired Continuous Geared Hinge

Wired continuous geared hinges provide all the features of hinges and pivots, with a few advantages.

If you upgrade a door to electronic access control (EAC), wired continuous hinges are an option. In these hinges, most of the hinge is mechanical, and a small section of the hinge that's mounted separately



» Marray electrified hinge, US800, flat black matte, with the leaves open, 2+4 wire, UL F listed

contains the wiring. Repairing or replacing a defective wired continuous hinge is relatively easy, and the door doesn't have to be removed or its use suspended while the door is being repaired (except for when wiring and final installation is performed).

We use continuous hinges on doors where conventional hinges and pivots aren't suitable. For example, if a standard butt hinge no longer tightens properly into its mortise, there might be concealed damage. On older buildings, I've worked on doors that actually were held together by layers of paint.

Any door that badly compromised is dangerous, because it might impede egress during an emergency and doesn't provide security to the premises.

## Conductors

Typical wired hinges use several small-diameter conductors made of woven wires and a fire-resistant fumeless coating. Performing the splicing and connections to PTH wire is different from most wiring and might require a few tools and practice to master. I use solder and b-caps.

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Plug-and-play modular connectors are offered by hinge manufacturers to simplify and speed up the installation. After you have made the transition from the delicate hinge conductors to more-robust conventional wires, the task becomes more manageable.

## Power-Transfer Choices

When determining the best power-transfer device for your application, answer the following questions:

### 1. What type of door is at the opening?

The type of door can help you to anticipate the degree of difficulty of the installation.

A solid-core door represents a challenge to get conductors from the hinge side to the lock location (the latch edge).

Hollow metal doors aren't exactly hollow. Bracing and internal intumescent material might be inside the door, which will complicate installing the wire. Drilling a fire-rated door could affect the rating.

Aluminum glass storefront doors and frameless herculite doors require special treatment to wire them.

### 2. What's being ired to the door?

Devices installed in doors typically are switches or sensors, electric-locking or latch-retracting solenoids, or electromagnetic devices.

The duty cycle and current draw will control the diameter and number of conductors transferring between the frame and the door.

Some devices require power or a connection only while the door is closed. This would include fail-secure locksets that must energize the lockset while the door is closed to allow the lever to become functional and enable the door to be opened.

Other types of locks require continuous power regardless of door position to ensure smooth operation. An example would be door-mounted electromagnets or exit devices that use latch retraction.



» Marray offset, Kawneer style, US28, aluminum paint finish, 2+4 wire, left-handed center power-transfer pivot for storefront aluminum doors

Interrupting power might result in latch-syncing issues or prevent the door from closing and latching. Many electronic devices don't operate well in environments where power is interrupted frequently.

The type of device also will determine the power required to be carried on the transfer wires as part of a switching circuit or to operate the lock.

If you service an existing locking system, you should conform to the original locking system circuit design when considering replacing the power-transfer device, unless the problems with the door system points to a design error with regards to the power transfer product specified.

If you upgrade to a different lock or system, it also might require rethinking the power-transfer hardware.

## Troubleshooting

In the case of wired power transfers, the wire that passes through the door hinge is flexed and stressed during every door operation. Eventually, it will require replacement.

So installing or revisiting an electric power-transfer installation often is necessary, and you have to assess all the variables when you plan and price

the repair or upgrade.

If a door already has electrification, how does that affect a potential hinge upgrade or replacement? This depends on the type of locking device on the door. Check for any visible signs of damage or abuse to the door or power transfer.

Before you dismantle the door, determine whether the problem is in the lock, the EAC system, the associated building wiring or the power transfer itself. Worn internal wires in a power transfer are a common point of failure.

Inspect the connections between the power-transfer wires and the lock and premises wiring. Test for continuity of each conductor, shorts between conductors or between conductors and ground. Because the wires pass through a metal hinge, they're prone to shorts to ground, which might be overlooked.

With your multimeter connected to the power-transfer wires, move the door to flex the conductors and look for fluctuations in conductivity. If so, find a power-transfer product better suited for the door.

## Marray Q&A

Marray is a well-established supplier of power transfers and installation tools. Locksmith Ledger spoke with Raymond Zehrung, president of Marray, about power transfer.

**Locksmith Ledger:** What's the strength of power-transfer hinges?

**Raymond Zehrung:** The strength is that the power and control wires are embedded into the hinge material, thereby making tampering difficult. Also, using concealed wire transfers doesn't leave any noticeable modifications to the door or frame, should the door be tasked for mechanical-only opening. In other words, the hardware can be removed, used again and again in other doors, and the door that was modified continues to operate as a solid or hollow door, with an original look.

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**LL:** Are electric hinges and pivots essentially the same thing?

**Zehrunig:** Yes. They both pass power through a hinge; a pivot is essentially a hinging point. Pivots have different applications, such as aluminum storefront doors, heavy doors, doors that have aesthetic features, etc. Hinges are about 99% of the market, because they're easy to mortise for, easy to install and more widely used because of costs.

The only advantage a 3/4 offset pivot provides is adjustment. However, when pivots are modified for wires, that adjustment screw in the center pivot is removed. This doesn't negate the adjustment screw on the top and bottom pivots though. Standard butt hinges aren't adjustable without fiddling with the mortise pocket.

**LL:** Are power-transfer hinges and pivots UL listed?

**Zehrunig:** Not all power-transfer hinges or pivots are UL listed for fire doors. My company was the first to pay for a three-hour burn test, so all of our hinges and our 3/4 offset pivots are burn-tested. It's important to ensure that any hinge that has been modified from the original ANSI 156 and NFPA 80 has received further testing to prove the modifications haven't had a detrimental effect on the performance of the hinge or pivot in a listed fire assembly.

**LL:** Is a raceway tube allowed or required for wiring from the transfer to the device?

**Zehrunig:** A tube isn't required. A raceway is, except in aluminum and steel doors.

According to the NFPA 80 Standard, 1991 edition, only select field modifications can be performed on fire-listed assemblies, such as doors and frames. Removing core material by drilling a raceway or modifying the back plate material on a frame, wasn't one of the accepted field modifications.

Murray developed the first tool designed specifically for drilling a raceway

through a door. Over the years, we worked out a deal with Intertek Testing Services to accept a program we developed called the Perfect Raceway Program. This program is now an Intertek IQP, and under the direction and training of Intertek, qualified personnel can drill a raceway into a particle wood or mineral core door and apply a label to the door that has the Warnock Hersey Mark, showing the door was modified under Listing Agency Authority.

A raceway in a door is defined as negative space or, in common vernacular, a hole or removed material. Wood and mineral core doors don't require any sleeve or tube inserted into the hole to meet requirements. I started my program with steel tubes that would be inserted, but it turns out that the steel tube would heat up and cause damage to the door during a fire. So it actually is more beneficial to not have anything inside the door, such as steel or metal. To get a wire from the hinge or transfer to the locking device, a raceway is necessary in wood and mineral core doors.

**LL:** Can you clarify what you mean that a tube isn't required but a raceway is, except in aluminum and steel doors?

**Zehrunig:** Steel and aluminum doors are often hollow, and the best way to wire those is to go over the top of the steel door and inside the channel of an aluminum door. Most aluminum doors are storefront doors, and as such, they have a glass insert, so a direct wire chase isn't possible. Typically, the wire is run from the hinge, up over the top of the stile and down the latch side stile to the lock — same with a steel door. They typically are constructed with a 1.5-2.0 steel outer framed box, and the wires would be run from the back of the hinge, up the channel, over the top, down the channel to the lock — a big U-shape wire chase, so to speak.

Following are some of the power-transfer hinges on the market.

## Murray Products

Murray's specialty electrified swing clear hinges are made from scratch. Murray drills its hinges while the leaves are flat, places a steel cable into the hole and then bends the hinge. It pulls out the cable with wires attached to it and essentially fishes wires around a corner. A casual observer won't be able to tell the hinge has wires in it.



» Murray standard, full-size, 3/4 offset pivot for steel, wood and aluminum doors for center-hung power transfer

Murray hinges come only in heights of 4-1/2 and 5 inches.

Murray also offers other power-transfer devices, including the Kawneer-style center power-transfer pivot for storefront aluminum doors.

**More info:** [www.murray.com](http://www.murray.com)

## SDC hinges & power transfers

SDC offers concealed mortise devices, wired door transfer hinges and wireless power-transfer devices, all UL listed for three-hour fire-rated doors.

SDC's PTH Series electrified power-transfer hinges provide a concealed and vandal-resistant method for running wires from the frame to doors equipped with electric locks and exit devices.

SDC's heavy-duty electrified mortise power-transfer device provides a



» SDC's PTH Series electrified power transfer hinge

concealed and secure means of transferring electric lock and exit device power and signal wires from the frame to the door. The PTM series is aimed at heavy traffic and applications that require higher security to inhibit tampering and abuse.

SDC's Wireless Power Transfer Devices use a radio frequency (RF) transmitter to send energy wirelessly across the door gap to an RF receiver that converts the energy to DC voltage to power electrified locks and latches. Retrofitting electrified locks into openings that have wood doors is simpler and less time-consuming, because core-drilling the door isn't required. The WPT's RF technology also allows for the transfer of latchbolt monitoring, request to exit or data signals.

**More info:** [www.sdcsecurity.com](http://www.sdcsecurity.com)

### Command Access Concealed Door Loop

The Command Access Concealed Door Loop (CDL) slides into the door or frame, which makes it concealed when the door is closed.

The CDL is designed for continuous- and butt hinge applications that are full mortise, half mortise or half surface and have a standard throw. They're an option where electronic transfer hinges are cost-prohibitive and surface door loops aren't desired.

**More info:** [www.com-mandaccess.com](http://www.com-mandaccess.com)

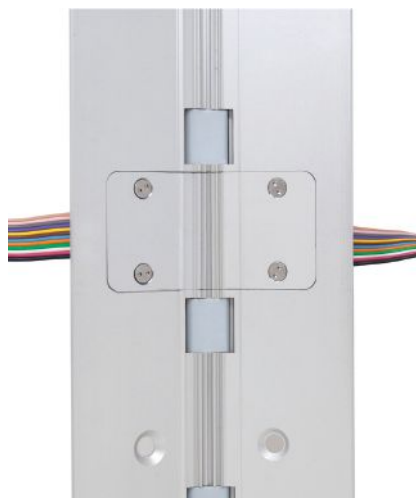
### ASSA ABLOY Architectural Door Accessories

ASSA ABLOY brand McKinney offers the ElectroLynx series of electrified hinges and power-transfer devices and cables for a universal quick-connect system that simplifies the electrification of the door opening. There are options for butt hinges and aluminum continuous geared hinges.

**More info:** [www.assaabloyarchitecturaldooraccessories.us](http://www.assaabloyarchitecturaldooraccessories.us)

### ABH

Architectural Builders Hardware Manufacturing (ABH) offers a wide assortment of power-transfer hardware, including geared hinges, power-transfer knuckles and pivots, including the E0519 Electrified Pocket Pivot with optional EZ Connect Molex Connectors



» Easy Access Concealed Electrical Hinge from ABH

for installation ease.

ABH also offers the EA Accessible Through-Wire (ATW) concealed geared continuous hinge. This hinge has no cuts or panels to compromise its performance or integrity. Simply remove the cover plate, access the recessed wires and make your repair.

ABH geared continuous hinges can be prepared for easy-access electric through-wires to provide continuous current.

**More info:** [www.abh-manufacturing.com](http://www.abh-manufacturing.com)

### Hager concealed loop

Hager's concealed mortise power-transfer loop provides a concealed and secure means of transferring electric lock and exit device power and signal wires from the frame to the door. It's recommended for use with hollow metal and aluminum frames. The all-metal design provides weather and tamper resistance when the door is open or closed.

The removable transfer allows the door to be serviced easily without removing the door from the opening. It isn't intended for center-hung door applications.

**More info:** [www.hagerco.com](http://www.hagerco.com)

### SELECT ATW hinges

The SELECT Accessible Through-Wire (ATW) electrically modified concealed hinge's fully integrated design lets you access a wire problem and make your repair in less than five minutes.

The design protects the ultraflexible 22-gauge through-wires so they last longer.

Select incorporated Molex connectors to speed up your hinge installations, too. Choose between four-pin, eight-pin or 12-pin connectors. Extra-long leads are available.

**More info:** [www.select-hinges.com](http://www.select-hinges.com) ■

*Tim O'Leary is an experienced security consultant and a regular contributor to Locksmith Ledger.*

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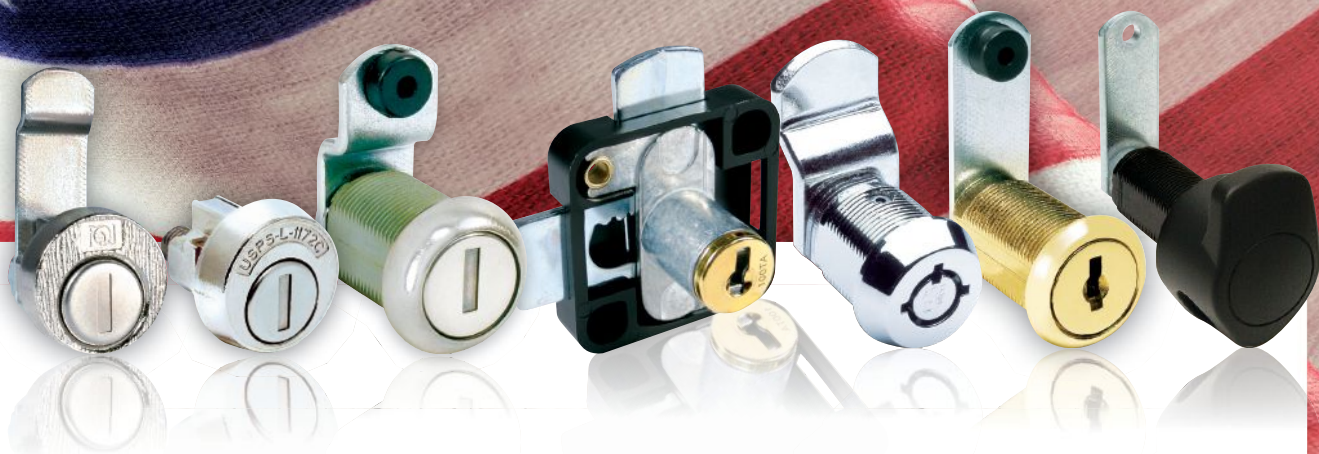
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# Electronic Hardware Motors Ahead

New motorized products provide several advantages over solenoid.

**E**lectronic access control (EAC) continues to grow and evolve in adoption and technology options.

Regardless of the technologies offered on the market, whether cloud-hosted access control systems, multifunction readers and credentials, or biometrics and facial recognition, one thing has remained constant: the door hardware. If the door doesn't close properly, latch and lock, there's no controlling access. Door hardware is — and always will be — the foundation of physical security.

The electronic locking hardware portion of an access control project continues to be one of the most critical and challenging aspects of the system in terms of complexity, options and installation expertise. According to Locksmith Ledger's State of the Industry 2021 report, nearly 86% of locksmiths believe electronics will be part of their portfolio by 2024.

With a variety of easy-to-install electric strikes and



» Command Access LPM190

maglocks on the market, we've seen an uptick in those product categories in recent years. They typically are less expensive and easier to install than are traditional electrified door hardware, and increasingly they're available as kits, bundles or other packaging designed to provide flexibility to the installer.

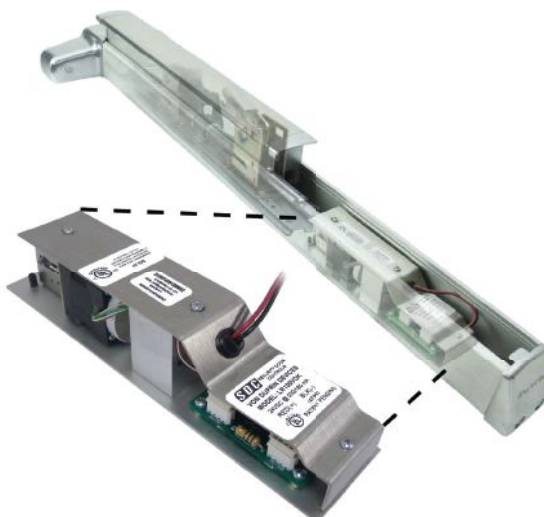
Although electric strikes and maglocks might be lower cost and easier to install, they aren't always architecturally compatible with the existing door hardware or might not meet the stringent life-safety requirements for many commercial buildings. This is why electrified door hardware tends to be the first choice of specification writers, architects and fire marshals for new buildings.

## Motors vs. Solenoids

Within the category of electrified door hardware, there have been some meaningful changes in recent years. One of the biggest changes is the move from solenoids to motors in EAC hardware. Although solenoids still are used in electric strikes, electrified cylindrical locks and electrified exit device trims, the migration from solenoids to motors in electrified mortise locks and exit devices is moving rapidly.

Motors have several advantages over solenoids. Let's explore them.

**Energy Efficiency:** Solenoids and motors require power to operate, of course. However, solenoids require much more amperage. For example, a 12VDC



» SDC LR100 and a Von Duprin exit device



» Precision Hardware APEX series exit device

solenoid-operated mortise lock requires around 700 milliamps (mA) to pull in and hold the plunger.

A motor consumes much less power, particularly when it's held in an open position for long periods, such as during electric dogging. The same lock using a motor uses 400 mA to cycle the motor and around 10 mA to hold it in the unlocked position.

Many commercial buildings now require that all electronic equipment be more energy-efficient to comply with Leadership in Energy and Environmental Design (LEED) certifications. Access control must meet those requirements as well.

**Heat Generation:** The more amperage an electronic component uses, the more heat that's generated. Heat breaks down electronic components. Because solenoids require more amperage to operate, they produce more heat. Using a motor that requires less amperage to operate and only a fraction to hold open reduces generated heat. Less heat equals longer life for the electrified hardware.

**Noise:** Another advantage motors have over solenoids is in the lower amount of noise produced. This is particularly evident in electric latch retraction (ELR) exit devices.

ELR simply means that when power is supplied to the solenoid or motor, the exit device latch is retracted. When power is cut, the latch returns to the locked position. This makes the exit device fail-secure, which means that when there's

no power, the latch is extended and the door is secure. This is important when an exit device is used on a fire door, because there always has to be a positive latch point. Fail-secure hardware also keeps a building's perimeter doors secure when there's a loss of power.

In a solenoid-driven ELR exit device, a large solenoid is required to pull back the latch or vertical rods. This large solenoid produces a loud "kerchunk" sound every time the solenoid is energized and can be distracting. However, because motorized latch retraction (MLR) is slightly slower in retracting the latch, it's much quieter. Quiet ELR operation now is a requirement in many hospitals, libraries, nursing homes, museums and public venues.

**Cost:** One of biggest advantages for MLR is in the cost. Solenoid ELR requires a high-amperage matched power supply to provide a high inrush of current (between 12 amps and 16 amps) to pull in and seat the solenoid plunger. MLR generally requires around 1 amp for activation and little amperage to hold the motor in the open position. Any power supply that provides enough amperage will do the job. Because motors require less amperage to operate, the cost

of the power supply is lower as well.

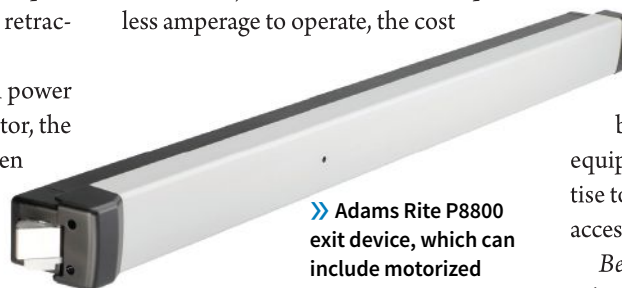
Another cost factor is the wire. To accommodate the high inrush of power on a solenoid-driven ELR device, 12-gauge to 14-gauge wire is required. Not only is this heavier gauge wire more expensive and more difficult to pull, but there also are far less power transfer options. Motorized ELR devices can use standard 18-gauge wire, which is lower cost, easier to work with and has multiple power transfer options.

**Retrofitting:** Most commercial buildings already have mechanical exit devices in operation. When access control is added, the exit device must be electrified. Installing a complete electrified exit device can be an expensive and time-consuming proposition. Rather than replace a perfectly good exit device, a motorized ELR retrofit kit can be field-installed and is a more cost-effective way to accomplish latch retraction.

Motorized ELR retrofit kits fit inside the empty space at the back of the exit device and can be installed in less than an hour. Adjustments are simple and provide a clean installation. Retrofit kits are manufactured by most exit device brands, including Precision Hardware, SARGENT and Von Duprin, and there are many offerings from aftermarket modification suppliers, such as ASCI, Command Access and Security Door Controls. They're widely available for most commercial exit devices and often have improved lead times over ordering complete electrified devices.

EAC now is a critical part of a locksmith's business. It can allow locksmiths to provide better security and accountability for customers. Understanding the best choices for EAC hardware will equip locksmiths with the added expertise to supply customers with the correct access control solution for them. ■■

*Beau Edelen is vice president, locking solutions for Wesco International.*



» Adams Rite P8800 exit device, which can include motorized latch retraction

# In the Field: Padlocks

Keying changes have opened up the uses and market for the venerable security devices.

**P**adlocks are one of the main products in a locksmith's security lineup. Padlocks of all types, including smart electronic models, are a primary point-of-purchase offering for customers who visit a lockshop. They also are a part of a security plan, particularly at remote locations.

Valley Forge Security Center in King of Prussia, Pennsylvania, was one of my first customers back in 1993. It opened in 1991. Bob Cook is the owner, and his brother, Steve, manages things and does most of the product ordering.

Steve Cook and I recently spoke about how Valley Forge makes use of padlocks as a solution to various situations and how that's evolved over the years.

**Locksmith Ledger:** As a salesperson for a couple of suppliers for the past 29 years, I look at the variety of padlocks available. It would seem that you can do much more now with padlocks, because the padlock key doesn't have to be separate from the rest of the security system being used, correct?

**Steve Cook:** That's a good point. The first ones I recall [that allowed that] were the ABUS 83/45 and the Master 6840 series brass padlocks that accepted the Lori type cylinder. That gave us the opportunity to upsell the customer. Now, they could incorporate the padlock key into the rest of the system. You're taking keys off their big key ring.

**LL:** Which ones are your go-to padlocks these days?

**Cook:** The ones I brought up are what I'm most familiar with — the ABUS and Master brass body ones. We recently tried a less expensive import version of the 83/45, and, unfortunately, they didn't hold up as well. I tried them because the ABUS locks kept increasing in price.

**LL:** How do you choose? Let's say you want to use Schlage's SC1 keyway. How do you decide on the padlock?

**Cook:** It used to always come down to price, but



» Steve Cook, manager of Valley Forge Security Center

with padlocks, it comes down to reliability first. The Schlage Kryptonite padlock is an option, but they're a more expensive choice. For me, it always comes back to ABUS. I'd rather not have anyone call me because their padlock failed.

Master's brass body and Pro Series locks are pretty versatile, but once in a while, there's a hiccup in terms of reliability. Maybe someone at the factory had a bad day and wasn't paying attention. Master's gotten rid of some [models] recently, and this could be a problem. A construction company's been using the

same padlock for 20 years on their job boxes, and all of a sudden, I can't get these locks anymore!

**LL:** What do you do in this case?

**Cook:** We go to another padlock, but some replacements aren't always able to be keyed to the existing system. I'm not sure why this decision was made. I will say Master's tech support and customer service have improved when you call, so that's a good thing.

**LL:** Have you run into situations where you couldn't come up with a padlock that could be used with an existing commercial system?

**Cook:** When the keyway requested is unavailable. ABUS offers the popular ones, and there's an 83/45 KNK (key-in-knob) that will accept a Lori type cylinder. If you're dealing with a more obscure Yale or Corbin keyway, for example, then you have to go with the original manufacturer, and they tend to be more expensive.

**LL:** So, reliability, cost and versatility seem to be the primary factors when you choose which padlock to use. Generally speaking, can you do much more these days than before?

**Cook:** Yes, it's been helpful and profitable. It's part of the upsell now. We went to a home recently to help with padlocks for the front gate as well as rekeying the front door. We let [the owner] know she could have one key for everything. She was very happy to know that in the future, new padlocks wouldn't necessarily be required, because the padlocks are rekeyable.

**LL:** What about electronic padlocks? Have you been able to incorporate them into access control jobs?

**Cook:** There are no padlocks I'm aware of that we can use and treat like an access point or like a reader of some kind. It would have to be wireless, and I'd have to have a PIM or something above the ceiling to receive the signal and send the signal back to the panel. The padlock itself, like the reader in a

system, has to be the right format.

For example, we use [dormakaba] Keyscan for much of our access jobs. There's no padlock that could house that type of formatted reader, operates on batteries and has to send a signal wirelessly. There has to be a lot going on in that padlock to accomplish that.

We have used the Medeco CLIQ system off-site. Let's say it's a utility company that has a site in the middle of nowhere. The user uses their key that has the electronics in the head. If someone wants to do an audit trail, they'd bring the key to the laptop to read the

information. There's a lot of them being used that way.

**LL:** So, in this case the padlock isn't electronic, but the cylinder communicates with the key, which then is read at the laptop. You can treat it like any other access control system?

**Cook:** Just like a car key that has a transponder. The cut key will go in and turn, but the car still won't start.

The one issue we've had with high-end padlocks that might or might not include electronics is that the poor padlock, for all its benefits and hard work, is treated terribly. The poor lock gets lost,



» One of several padlock displays at the Valley Forge Security Center

run over, whacked. The padlock would like a little lubrication once in a while.

**LL:** So, the padlock typically is treated as something separate from the rest of the system — an off-site afterthought?

**Cook:** By its nature, a padlock hangs on a hasp happily. Take it off without being attached to a chain, and who knows what might happen to it? I always hesitate to upsell high-end padlocks for that reason. I always try to upsell a chain with any padlock: Take [the padlock] off, and it won't go anywhere.

**LL:** On the one hand, you don't want customers associating Valley Forge Security with things that go wrong, but on the other hand, you're a business that wants to maximize sales and profits.

**Cook:** I'll upsell and would love to sell you a \$500 padlock, but I don't want you yelling at me days or months down the road, asking why I sold this to you.

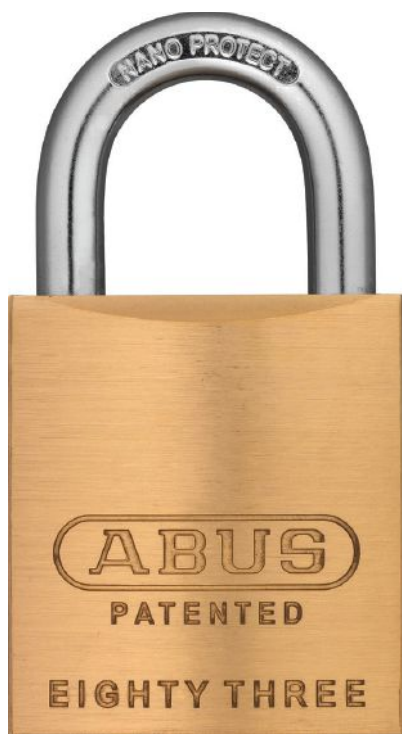
If I sell you a Master 175 [numbers dialed at the base of the lock], I'll tell you to write down the combination and keep it in a safe place. [Customers] come back later and say they set it properly but can't remember what they set it to.

**LL:** Do customers come to you with ideas about how a padlock could be a solution to a problem, or are you more likely to suggest it?

**Cook:** Customers will ask about the best way to secure something, and that's when we explain that a padlock can be keyed the same as other locks they have on a building.

**LL:** Do you get involved in jobs where large numbers of padlocks are requested keyed-alike? I always wonder why that's requested when a lost or stolen key would deny someone access to so many locks.

**Cook:** I used to get a certain lock for a construction company that had a restricted key. I've sold them hundreds of padlocks, and people will come in with a key to have duplicated, and I recognize it as the key to these locks. Or maybe they



» The ABUS 83/45

come in with a padlock and key they found on the ground or at a garage sale. I have to explain each time that I can't make that key for them, because [the customers] aren't authorized.

I have several accounts that have hundreds of padlocks scattered throughout the city. Take the trash company that has all of its containers using the same keyed-alike padlock: If a key gets out, is someone going to be going around opening dumpsters? In some cases, it makes sense.

Restricted padlock keys are generally different from something like [Schlage] Primus or Medeco, because there are typically many of them out there, and the padlocks are scattered all over the place. If someone finds a key or takes it off someone's ring, they have no idea where most of the padlocks are. It's not like you found the masterkey to a building and now have access to everything.

**LL:** What would you like to see changed or offered in the padlock world that doesn't exist?

**Cook:** More versatility. Too often we're limited because of the shackle size. It's not wide or long enough or just doesn't work in some applications. I haven't found a padlock that fits properly on refrigerator handles, for example. ■■

*Steve Kaufman has worked for distributors in the locksmith industry since 1993 and worked as a full-time locksmith from 1978 through the 1980s. Kaufman is the sales manager for IDN Hardware out of its Philadelphia location.*

## Manufacturers' List

Following is a partial list of padlock brands, mechanical and electronic:

- **ABLOY Critical Infrastructure:** [www.abloy.com/global/en-us](http://www.abloy.com/global/en-us)
- **ABUS:** [www.abus.com](http://www.abus.com)
- **American Lock:** [www.masterlock.com](http://www.masterlock.com)
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- **CyberLock:** [cyberlock.com](http://cyberlock.com)
- **FJM Security:** [www.fjmsecurity.com](http://www.fjmsecurity.com)
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- **Olympus Lock:** [www.olympuslock.com](http://www.olympuslock.com)
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- **Schlage:** [www.schlage.com](http://www.schlage.com)
- **Wilson Bohannon:** [www.padlocks.com](http://www.padlocks.com)
- **Yale:** [www.yalecommercial.com](http://www.yalecommercial.com)

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# Frontline Defense Full-Size Latch Guard

Preventing attacks and bypasses on aluminum storefront doors can be achieved in less than one hour.

**A**luminum storefront doors handle all sorts of abuse, and that's just from regular use. They also have to stand up to attack from criminals, including those who use a prybar, a saw or even a special tool aimed at locksmiths that allows them to defeat an Adams Rite hook bolt deadlock.

However, locksmiths have a new tool in their arsenal that can stop all of those attacks — an interlocking full-length latch guard. The piece of door hardware is made by Frontline Defense Systems in Edmonton, Canada.

## The Interlocker

The Frontline Defense Interlocking Astragal, or Interlocker, is two pieces of aluminum (or steel for hollow metal or wood doors). One piece is installed on the door, the other on the frame. The full-length U-shape notch on the door piece interlocks with the L-shape-piece on the frame to eliminate the gap in the door and prevent access to the lock bolt and, thus, a prybar or other types of attacks.

The product has been out for about a decade but only recently has come to the attention of locksmiths outside of Edmonton. That's the result of the company's acquisition in 2018 by Ron Murray, who owned a locksmith company in Edmonton and was heavily invested in installing the Frontline Defense Interlocker.

"We had installed 170 of them that year," Murray says of 2018. He was talking to the owner of Frontline Defense about a potential modification when the owner asked whether Murray wanted to buy the company. "I said yes. It wasn't a whole lot of negotiation. It was, 'Yep. I want it. Let's get it done.'"

Murray says he saw early on how successful the product was after a run of break-ins on one side of a street. He installed the product on nine doors on a set of buildings, and the break-ins moved across the street.



» The L-shape piece on the door frame, right, interlocks with the U-shape piece on the door.

"A month and half later, the guys on the other side of the street said they needed 14 of them on their complex," Murray says.

A more recent convert was Wayne Winton of Tri-Country Locksmith Services, located in Glenwood Springs, Colorado. During a recent Zoom meeting, Winton demonstrated an installation of the Interlocker on an aluminum storefront door.

"This is a no-brainer and an easy moneymaker," he said of the Interlocker, adding that the entire installation takes less than an hour.

Winton said all he has to do to make the sale is show a video of the easy defeat of a storefront door that has a hook bolt lock to the owner, "and they're in a hurry to hand you a fistful of money."

## The Installation

The tools necessary for the installation of a storefront Interlocker are as follows:

- Drill
- 3/16-inch metal drill bit
- 9/32-inch metal drill bit
- Step bit
- Heavy-duty rivet tool
- 3/16-inch Allen wrench
- Hammer
- Combination square
- Level

Another important tool comes with the Interlocker, as Winton and Murray pointed out — the packing foam, which is used to help to align the two interlocking pieces.

Because the Interlocker is a full-size latch guard, any door hardware that would overlap with the Interlocker has to be removed from the door at the outset. In Winton's installation, that meant removing

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|              | H                                 | W    | D    | H                                | W    | D    |                              |
| MS911-G-K    | 11½"                              | 15¼" | 12½" | 8½"                              | 12"  | 8½"  | 61                           |
| MS911-G-E    | 11½"                              | 15¼" | 12½" | 8½"                              | 12"  | 8½"  | 61                           |
| * MS912-G-K  | 13½"                              | 16¾" | 15½" | 9½"                              | 12¾" | 10¼" | 85                           |
| * MS912-G-E  | 13½"                              | 16¾" | 15½" | 9½"                              | 12¾" | 10¼" | 85                           |
| * MS129-G-K  | 16¾"                              | 13½" | 15½" | 12¾"                             | 9½"  | 10¼" | 85                           |
| * MS129-G-E  | 16¾"                              | 13½" | 15½" | 12¾"                             | 9½"  | 10¼" | 85                           |
| * SS1612-G-K | 20"                               | 16¾" | 17½" | 16½"                             | 12"  | 12½" | 140                          |
| * ES1612-G-E | 20"                               | 16¾" | 17½" | 16½"                             | 12"  | 12½" | 140                          |

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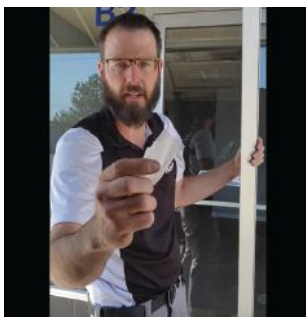
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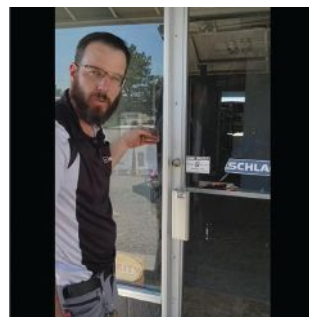
» Wayne Winton holds the Frontline Defense Interlocking Astragal



» A rivet gun is recommended to assist with the installation.



» Winton holds a piece of packing foam, which helps with the alignment of the latch guard pieces.



» The Frontline Defense full-size latch guard installed

These images courtesy of Wayne's Lock Shop

the cylinder, door handle and latch.

Murray noted that any strike lip that isn't flush with the frame has to be cut down so the strike won't impede the interlocking nature of the latch guard. The same is true of any bolts or blind nuts that might prevent the Interlocker from being flush to the door and frame.

"All of [the reinstalled hardware] will help to hold the latch guard in place," Winton said. That also means that the holes for the cylinder and handle have to be redrilled through the latch guard. For the handle, Winton advised drilling the hole all the way through the door to use as a template for the latch guard.

The L-shape latch guard piece then is attached to the frame by using the 3/16-inch drill bit to drill through the Interlocker roughly 1 inch from the top and then into the frame. Frontline recommends then doing the bottom the same before marking even lengths of 14–18 inches between the two points. Rivets then are popped into place, and you should make sure that the gap in the door remains consistent and the L-shape piece is plumb.

Winton noted that having sharp drill bits is important to save time and wear on the body and added that he includes the price of new drill bits in his install quote.

### Foam Comes Into Play

The packing foam comes into play when installing the U-shaped latch-guard piece on the door. The foam that's used to keep

the latch guard pieces separate in the box is again used to separate and align the two pieces during the installation so there's no binding later on.

"I like to follow the natural door lines, just again to keep everything aesthetically pleasing," Winton said.

The U-shape piece is attached by through bolts that require the 9/32-inch drill bit. Winton advised starting with the 3/16-inch bit to save wear on the drill bit before moving to the larger bit. The bolts should be even with the rivets on the L-shape piece for a clean presentation.

"I like to drill all the holes first and then add the bolts," Winton explained. "Picking up one tool and putting it down for another constantly takes up my time."

Another piece of advice: If there's vertical linkage in the door, you can't use through bolts, only rivets to attach both pieces. This also is true for a double-door installation, and Frontline Defense has Interlockers to handle that application.

With the latch guard in place, the final step is reattaching all the door hardware. Winton used the hole for the interior cylinder as a template for the exterior cylinder and then reattached the hardware in the reverse order that he took it off the door: handle, hook latch, cylinder.

One final note: If you use a cylinder collar, you might have to remove a ring from the cylinder because of the added depth of the latch guard.

Winton noted that although the latch

guard now effectively has prevented by-passing or a brute-force attack against the latch, the other side of the door's exterior might be vulnerable. That's where a continuous hinge comes in, which Winton's door already had.

Murray says the Interlocker adds 20 pounds to the latch side of the door, and old hinges easily could cause the door to sag. "A continuous hinge is an easy upsell," he says. "If you have failing hinges when you put [the Interlocker] on, this isn't going to make that better."

Murray further advises on the purchase of a good rivet tool — he suggests one made by Milwaukee Tool — if you plan to install a number of latch guards. He says that at a recent trade show, a number of locksmiths told him the one thing they don't like about installing the Interlocker was the number of rivets necessary, "and the ones who were using [the Milwaukee] tool said, 'Love it.'"

Between the Frontline Defense full-size latch guard and the addition of a continuous hinge, "how much bigger and beefier does that make the door look," Winton said. "Just the intimidating look makes criminals go somewhere else."

Murray says the Frontline Defense Interlocker comes in 11 different colors.

**For more information, go to [frontlinedefense.com](http://frontlinedefense.com).** ■■

*A video of Winton's installation can be found at [www.youtube.com/watch?v=cGTNniMJt0&t=1731s](https://www.youtube.com/watch?v=cGTNniMJt0&t=1731s).*

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# Vehicle Entry in 2022

Side-impact and rollover standards forever changed the game for locksmiths.

**T**he average age of vehicles on the streets in North America is 12.2 years, according to S&P Global Mobility. Over the past year, this figure went up by two months — no doubt because of the increase in the prices of gasoline and used vehicles. The fact is that almost every vehicle we unlock these days was made after 2006, so there's no point in discussing ancient history with respect to vehicle-entry methods. Instead, I'll stick with discussing post-2006 vehicles.

Why 2006, and not 2010, which is 12 years ago and the average age of vehicles on the road? Because the original side-impact and rollover standards for vehicles went into effect for the 2006 model-year.

Manufacturers had years to prepare for the 2006 deadline, and many vehicles from the early 2000s were compliant with the 2006 standards. These



» A Kia that came to my shop for other lock work. I doubt whether a locksmith did this, but the fact that the owner of the car accepted this level of damage boggles my mind.

standards changed the way that locksmiths gain entry to locked vehicles. Since 2006, the side-impact and rollover standards have been amended and extended in many ways. The bottom line, from a locksmith's point of view, is that poking around inside car doors with wire tools or antiquated slim jims is a waste of time at best and dangerous at worst.

As a result of the side-impact and rollover standards, there are almost no "linkage rods" inside vehicle doors. Linkage rods have been replaced primarily by bicycle-style cables and, in some cases, by electronic systems. Attacking either system by using a metal tool that goes inside the door is pointless and easily can disconnect cables or short out wiring, which makes the job more difficult and often requires costly repairs.

## The Two Methods

I always have taught that there are three reasonable methods for unlocking vehicles: pick the lock, attack the lock operator inside the vehicle or attack the mechanism inside the door. Because the side-impact and rollover standards essentially eliminated the possibility of inside-the-door attacks, that now leaves



» A Mitsubishi Galant that I came across at an auction



» Another vehicle that I saw at an auction

only two methods: attacking the inside lock operator and picking the lock.

Please understand that in automotive locksmithing, there are exceptions to every rule. I fully understand that on some vehicles, there still are ways to attack the mechanism inside the door, but I've found those exceptions to be few and far between. One that comes to mind is certain Volvo "big rigs" that use side-milled locks and can be unlocked best by attacking the power-door lock mechanism inside the door.

At one time, I was best known for teaching vehicle-entry methods and for designing and selling vehicle-entry tools. In 1999, I introduced the first modern long-reach tool, the Jiffy-Jak Vehicle Entry System. At that time, it was considered revolutionary or controversial, depending on whether you made your living by selling vehicle-entry tools or by using them. Today, hundreds, if not thousands, of different long-reach tools are sold.

Regardless of the tool and the manufacturer, most of them work the same way: You open a gap between the door and the body of the vehicle and then use a long tool, typically a metal rod, to operate the inside lock control just as though you were inside the vehicle.

The biggest problem with long-reach tools is opening the gap between the door and the frame without damaging the vehicle. Judging by some of the tools that are on the market and some of the damage I've seen on vehicles, a lot of people don't seem to care about the damage.

It not only is possible but even easy to use a long-reach tool without causing any damage. Over the years, I've demonstrated the original Jiffy-Jak cleanly thousands of times. The important thing is to approach the entire operation carefully and to not be in a hurry.

Using an air wedge to open the gap also is a big factor

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- **DURABLE STEEL KEY RACKS** that are slotted to store key tags uniformly for immediate identification.
- **"OUT KEY" CONTROL TAGS** that are made of yellow paper. They are used for accountability (to record information on loaned keys).

**www.hudsonlock.com**

Request Information: [www.locksmithledger.com/10172692](http://www.locksmithledger.com/10172692)



» A typical Lishi 2-in-1 pick. For beginners, I suggest the F038 pick for the Ford eight-cut locks or the CY24 pick for the Chrysler eight-cut locks.

in preventing damage, yet one of the best-selling tools on the market comes with what essentially is a chainsaw wedge that you're supposed to jam between the door and the frame, which often shreds weatherstripping along the way. So, my desire to avoid damaging a customer's car apparently is far from universal.

## Pickin' & Grinnin'

Several years ago, I dislocated my right shoulder severely and tore my rotator cuff (worst pain I ever endured)! As a result, holding my arm up to manipulate a long-reach tool became painful.

This gave me big incentive to sharpen my lock-picking skills! Today, thanks to Original Lishi 2-in-1 tools, I rarely use a long-reach tool. Using the Lishi tools for vehicle opening apparently surprises a lot of locksmiths as well as my customers. I can't tell you how many times I've been told, "I've never seen it done like that before!" or "Why didn't the last guy use a tool like that?"

I once had a nice elderly lady blow up at me as I got out of my truck, heatedly telling me, "You are NOT going to use one of those long tools on my truck! If that's what you have in mind, just leave, and I'll call someone else!" When I told her I had no plans to use such a tool, she was surprised and watched me unlock her Dodge pickup in less than a minute by using a Lishi tool. Afterward, she

showed me the damage on the passenger side of the truck from the "last guy" and asked why everyone didn't use a tool like mine!

After looking at the impressive damage, I just shook my head and said I had no idea why people did that sort of thing.

Of course, using the Lishi tools or any other picking method requires a significant investment in time and equipment. Although the price of the tools has dropped considerably since they were introduced, they still aren't inexpensive — although there are a LOT of cheap knockoffs that rarely work and break easily!

I still am not a member of the National Automotive Service Task Force

(NASTF), so when I generate a key for a vehicle, I almost always use a Lishi 2-in-1 tool to decode the lock.

The trick to getting comfortable with using a Lishi tool for vehicle entry is simply to use them a LOT. When I got my first Lishi tool, I sat at the workbench and practiced using the tool for hours. Sometimes, such as when I was learning to pick the HU-100 and HU-101 keyway locks, I practiced using the tool on a lock that had a slot, so I could see what was happening while I was practicing. But mostly I either used new locks that I bought just for the purpose of practice or used locks that I scavenged from my local U-Pull-It.

Practice really is the secret. A friend of mine has had several Lishi tools for a long time but hasn't mastered the use of them. Yet he routinely manipulates safe locks. I've tried to make the point that if he practiced using the Lishi tools for even a fraction of the time he spent learning safe manipulation, he soon would become an expert with the Lishi tools. But in his case, he would rather just refer the automotive work to me, which I don't mind in the slightest. ■■

*Steve Young has been a locksmith since 1973 and has trained and taught locksmiths since 1988. He is a frequent contributor to Locksmith Ledger.*



» A General Motors ignition lock that uses the HU-100 keyway. The outer sleeve turns around the central plug, and the slot in the sleeve allows you to see what the tool does while you practice picking the lock.

# LOCKSMITH LEDGER

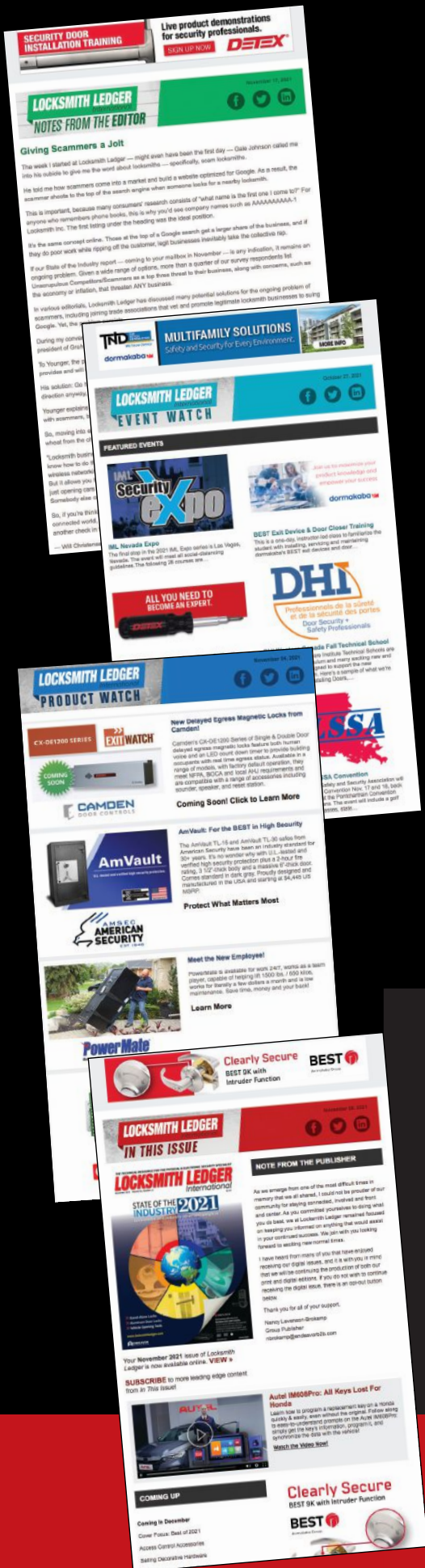
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## ASSA ABLOY Academy Upgrades Learning Experience Platform

ASSA ABLOY has unveiled a redesigned and easier to use Learning Experience Platform (LXP) for ASSA ABLOY Academy, the company's expansive e-learning and in-person training system. The education innovation will continue in 2023 when ASSA ABLOY Academy adds its own Locksmith Academy.

The ASSA ABLOY Academy LXP is designed to educate door and hardware professionals about proper installation techniques, how to identify common issues, maintaining code compliance and the latest product innovations to help to enhance building safety, security, convenience and performance. The site features a full spectrum of training, from fundamentals through intermediate courses to advanced level learning.

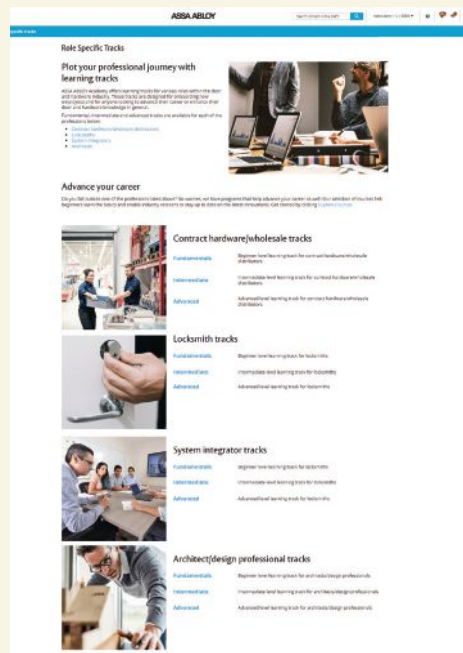
Classes are broken into three levels for the four professions listed on the site — locksmith, contract hardware or wholesaler, systems integrator and architect or design professional, Tom Seidel, manager of training and education, ASSA ABLOY Door Security Solutions, explained at GSX 2022. About

70 classes are offered — some online and some in-person at ASSA ABLOY's seven U.S. training centers. ASSA ABLOY Academy also maintains an extensive video library of previous classes as a reference. Every online class is free, as are about 95 percent of the in-person classes, Seidel notes.

After an employee registers for an account in the LXP, their email address will be matched automatically to the employer's account. Their manager can assign training courses for the security pro's specific track and level as well as monitor progress and completion. Employees can monitor their progress by using a custom dashboard for career-path management. The dashboard displays timelines of activities and achievements at a glance.

In addition, ALOA and Door Hardware Institute continuing-education credits are earned when courses are completed.

Locksmith Academy sessions will



ASSA ABLOY Academy: Career Tracks page

involve plenty of hands-on training. Classes will last a week and a half. The first session will be a test run this month at the ASSA ABLOY training center in Ontario, California. After the curriculum is finalized, Seidel expects two sessions to be scheduled in 2023.

**To learn more about the new ASSA ABLOY Academy LXP, go to [learn.assaabloy-academy.com/learn](https://learn.assaabloy-academy.com/learn).**

## People in the News

Hager Cos. announced the promotion of **Johnston Hager** to the position of president and chief operating officer. **Ralph J. Hager II** retains the position of CEO, while **Rusty Hager** retains his position as chairman of the board of directors.

In his role as senior vice president of residential sales, national accounts and customer support, Johnston Hager was instrumental in driving customer relationships and reorganizing Hager's customer-support team. Under his leadership, Hager has expanded the technical-services team and developed a customer-support team that has been ranked No. 1 in surveys conducted by two of Hager's most prominent customers.

Johnston continued to lead Hager's efforts within the

company's residential-products category and was able to increase market share during the post-pandemic supply-chain struggles.

"I am pleased with the direction our company is going and expect continued success with Johnston leading our team as president and chief operating officer," says Ralph Hager. "On behalf of the board of directors and the entire Hager team, I want to congratulate Johnston on his promotion and wish him the best in his new role. I have complete faith in his abilities to lead our team to continued top- and bottom-line growth going forward."



Ralph Johnston Hager III



» 2022 Nissan Rogue

## Advanced Diagnostics Releases Nissan, Mitsubishi Software

» Advanced Diagnostics has released key-programming software compatible with certain Mitsubishi and Nissan models for model-years 2020 through 2022. The software is ADS2326.

The software is designed to program prox keys compatible with 2021 and 2022 models of the Nissan Rogue, 2022 models of the Mitsubishi Outlander and the Nissan Pathfinder, and 2020 and 2021 models of the Nissan Sentra. The software supports all keys lost for the first three vehicles but add key only for the Sentra models.

The software bypasses the security PIN code and programs the remote and transponder at the same time. It requires a Smart Pro programmer and an ADC2017 cable to complete the programming procedure, but the software is stand-alone, so no internet connection is necessary.

More models are coming soon, Advanced Diagnostics says.

For more information, go to [www.adusa.com](http://www.adusa.com).

## Justice Department Sues to Block Merger

» The U.S. Department of Justice has sued to block the \$4.3 billion acquisition of Spectrum Brands Hardware and Home Improvement (HHI) by ASSA ABLOY on antitrust grounds. As of press time, ASSA ABLOY and HHI said they would defend the deal announced in September 2021.

In its complaint, filed in the U.S. District Court for the District of Columbia, the Justice Department charges that the merger would risk higher prices, lower quality, reduced innovation and poorer service in at least two types of residential door hardware: premium mechanical door hardware and smart locks.

ASSA ABLOY owns the Yale, August

Home and Emtek brands. HHI owns the Kwikset and Baldwin brands.

According to the Justice Department's statement, the transaction if completed would give ASSA ABLOY a "near-monopoly" in premium mechanical door hardware and more than a 50% share in smart locks. It further states that the merger would give ASSA ABLOY roughly a 50% share of the overall residential door hardware market.

In a statement, ASSA ABLOY said it and HHI "remain confident in the merits of this transaction and will jointly defend it," adding the two companies were confident they would "prevail in litigation."

The two companies had announced in July 2022 that they would extend their purchase agreement to June 30, 2023.

## Yale Home Launches Assure Lock 2

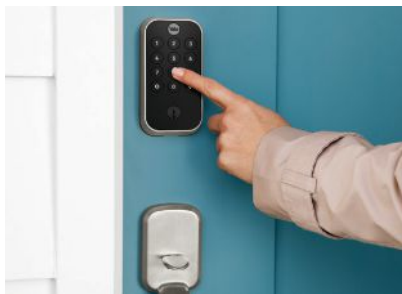
» Yale Home has unveiled Yale Assure Lock 2, the company's newest flagship collection of smart locks.

The collection includes Yale Assure Lock 2 with Bluetooth for at-home control and Yale Assure Lock 2 with Wi-Fi to manage the lock remotely. Coming soon, Yale Assure Lock 2 with Z-Wave for Ring Alarm and Samsung SmartThings customers, and a Matter Smart Module to make Yale one of the first Matter-compatible smart locks on the market.

All models are programmed by using the Yale Access app. Wi-Fi Smart Modules also are available with the locks or sold separately and no longer require a Wi-Fi Connect Bridge, which enables even simpler setup.

The Wi-Fi and Matter Smart Modules will work with Yale's original Assure Locks.

For more information, go to [www.yalehome.com](http://www.yalehome.com).



» Yale Assure 2

## "5 Things You Need To Know" About Camden's CX-EPD1289L

» Camden Door Controls is supporting the launch of its CX-EPD1289L preload strike with a new "5 Things You Need To Know" promotional video. The video succinctly explains preload and demonstrates how the 1289L strike works with preload in contrast with how other rim strikes won't.

The five topics highlight the features and benefits of the 1289L Grade 1 surface-mount rim strike with latch monitoring.

### No. 1. The First Surface Mount Preload Rim Strike

Pressure on the keepers of the strike, known as preload, is the No. 1 reason that rim strikes fail to operate. Preload can be caused by differences in air pressure on each side of the door, a misaligned door or simply someone pushing on the door before the strike is unlocked. Regardless of the cause, Camden's 1289L rim strike will operate where other strikes won't.

### No. 2. A Patented New Rim Strike Design

Camden CX-EPD1289L rim strikes have a patented design that enables them to operate with up to 15 pounds of preload pressure. The video puts that capability to the test.

### No. 3. One Universal Model

There's no need to stock a range of rim strike models. Camden offers one universal rim strike that includes UL security and fire ratings, field-configured latch monitoring, selectable fail-safe or fail-secure operation and dual voltage.

### No. 4. Metal Template Included

Installing this rim strike is quick and easy, and a metal marking template is included in the package.

### No. 5. Backed by Camden's No-Hassle 5-Year Warranty

The CX-EPD1289L video can be viewed on Camden's product page as well as on Camden's YouTube channel.

For more information, go to [www.camdencontrols.com](http://www.camdencontrols.com).



» Camden CX-ED1289 electric strike

## New Products

### Camden Enhanced ValueWave Hands-Free Switches

The CM-221 Series ValueWave switch has been updated with an enhancement. A manual override to the ValueWave single-gang, no-touch switch is designed to ensure that a request-to-exit switch will open a door, even if the switch sensor fails to operate.

Camden CM-221 Series ValueWave switches provide dependable hands-free activation. Aimed at indoor or outdoor use as part of an automatic door or access control system, ValueWave no-touch switches are easy to install and designed for trouble-free service in high-traffic applications. CM-221 Series switches are available in a range of models, with narrow, single- and double-gang stainless steel faceplates and a selection of laser-etched faceplate graphics.

**More info:** [www.camdencontrols.com](http://www.camdencontrols.com)

» Request Information: [www.locksmithledger.com/21279995](http://www.locksmithledger.com/21279995)



### Codelocks Smart Lock for Glass Doors

Codelocks introduced its first smart lock designed to be used on glass doors, the CL4500 GD. Equipped with NetCode technology that allows users to create date- and time-sensitive temporary coded access, the CL4500 GD is a medium-duty electronic lock with a Rondo-style patch lock suitable to fit the tough disposition of glass.

The CL4500 GD with key override can manage up to 350 users who can unlock via code, card or smartphone. NetCode's proprietary technology allows facilities and building managers to create and manage access via an app or online portal, which leads to temporary code generation that can range from one hour to one year for single or multiple uses. Once generated, a NetCode can be shared via email or SMS and will expire after its set duration.

The stand-alone battery-powered lock doesn't require Wi-Fi to operate. The lock can be fitted to a solid door frame by using the flat strike panel or to glass side panels by using the additional strike box. This makes it possible to use in rooms that are partially or fully glass-walled. The lock includes a 12-button backlit keypad for operation in dim light conditions.

**More info:** [www.codelocks.us/cl4500-smart-glass-door-lock](http://www.codelocks.us/cl4500-smart-glass-door-lock)

» Request Information: [www.locksmithledger.com/21282102](http://www.locksmithledger.com/21282102)



### Locinox Valentino

The Valentino code lock is Locinox's highly anticipated electronic push-button lock. It comes in black or silver and operates on six lithium metal AA batteries, which are included with each unit. What's unique about the Valentino is it can hold different entry and exit codes. Up to 100 codes can be stored. The surface-mounted Valentino's energy-efficient design makes it easy to equip any gate with

access control, with minimal maintenance required.

PIN codes can be added, modified or removed easily. The thirteen-sixteenths of an inch continuous adjustability of the latch bolts allows for perfect latching.

Other features include:

- ISO 9227 KTL / E-coated lock box withstands 1,000 hours of salt spray
- Weather-protected illuminated electronic code panel on both sides
- Up to 150,000 open or close cycles on set of batteries
- Low-battery warning light
- Support for free-exit, push bar and code-controlled handles
- Key-operated unlocking and programming functionality
- Supports permanently open codes

**More info:** [www.locinoxusa.com](http://www.locinoxusa.com)

» Request Information: [www.locksmithledger.com/21280857](http://www.locksmithledger.com/21280857)



### Digilock Curve

Digilock has unveiled its latest design-forward innovation, Curve.

Inspired by the company's classic model, this next-generation lock features basic, advanced or networked cloud-management capabilities for anytime, anywhere control. Curve also has wireless connectivity through Bluetooth Low Energy (BLE) and the customer choice of keypad, RFID or mobile access to simplify deployment options.

In addition to the deployment options, Curve also features:

- An option for 24/7 networked lock management through proprietary DigiLink software
- Integration with existing access control systems and third-party applications
- Shared or Assigned Use functionality
- Easy, wire-free installation and seamless retrofit
- ADA-compliant options
- Motorized opening in deadbolt or latch
- Lifetime customer support

**More info:** [www.digilock.com](http://www.digilock.com)

» Request Information: [www.locksmithledger.com/21280901](http://www.locksmithledger.com/21280901)



## » NOVEMBER 2022

**Nov. 2-4: DHI conNextions 2022**, David L. Lawrence Convention Center, Pittsburgh. More info: [www.dhiconnections.com](http://www.dhiconnections.com)

**Nov. 2-4: IML Nevada Expo**, Las Vegas. Classes Nov. 2-3, Expo Nov. 4. Preregistration is open. More info: [www.imlss.com](http://www.imlss.com)

**Nov. 16-17: ISC East**, Javits Center, New York City. More info: [www.isceast.com](http://www.isceast.com)

## » FEBRUARY 2023

**Feb. 22-24: IML California Expo**, Universal City, California. More info: [www.imlss.com](http://www.imlss.com)

## » MARCH 2023

**March 21-23: NFMT**, Baltimore. More info: [www.nfmt.com](http://www.nfmt.com)

**March 28-31: ISC West**, Venetian Hotel and Casino, Las Vegas. More info: [www.iscwest.com](http://www.iscwest.com)

## » APRIL 2023

**April 12-14: IML Utah Expo**, Salt Lake City. More info: [www.imlss.com](http://www.imlss.com)

**April 17-23: Safetech 2023**, Atlantis Hotel, Reno, Nevada. More info: [www.savta.org](http://www.savta.org)

**April 24-28: SHDA Industry Advancement Summit**, Caribe Royale, Orlando, Florida. More info: [www.shda.org](http://www.shda.org)

**April 26: Security Canada East**, Sheraton Laval, Quebec. More info: [www.securitycanada.com](http://www.securitycanada.com)

## » JUNE 2023

**June 14: Security Canada West**, Sheraton Vancouver, British Columbia. More info [www.securitycanada.com](http://www.securitycanada.com)

**June 21-23: IML Kansas Expo**, Kansas City, Missouri. More info: [www.imlss.com](http://www.imlss.com)

## » AUGUST 2023

**Aug. 6-12: ALOA 2023**, Hilton Orlando, Florida. More info: [www.aloa.org](http://www.aloa.org)

**Aug. 9-11: IML Arizona Expo**, Phoenix. More info: [www.imlss.com](http://www.imlss.com)

## » SEPTEMBER 2023

**Sept. 11-13: GSX**, Dallas, Texas. More info: [www.gsx.org](http://www.gsx.org)

## » OCTOBER 2023

**Oct. 25-26: Security Canada Central**, Toronto Congress Center, Toronto, Ontario. More info: [www.securitycanada.com](http://www.securitycanada.com)

## » NOVEMBER 2023

**Nov. 8-10: IML Nevada Expo**, Las Vegas. More info: [www.imlss.com](http://www.imlss.com)

## » ONGOING

**Allegion Training:** [us.allegion.com/en/home/training.html](http://us.allegion.com/en/home/training.html)

**Alarm Lock and Marks USA Training:** [www.alarmlock.com/seminars](http://www.alarmlock.com/seminars)

**American Key Supply Locksmith University:** [www.americankeysupply.com/pages/las-vegas-locksmith-university-lvlu](http://www.americankeysupply.com/pages/las-vegas-locksmith-university-lvlu)

**ASSA ABLOY Academy:** [www.assaabloyacademy.com/en/americas](http://www.assaabloyacademy.com/en/americas)

**Detex webinars:** [www.detex.com/upcomingtraining](http://www.detex.com/upcomingtraining)

**dormakaba training:** [www.dormakaba.com/us-en/support/training](http://www.dormakaba.com/us-en/support/training)

**Mul-T-Lock Academy:** [www.mul-t-lock.com/us/en/mtl-academy](http://www.mul-t-lock.com/us/en/mtl-academy)

**Paxton Access:** [www.paxton-access.com/us/training](http://www.paxton-access.com/us/training)

**SALTO Systems:** [saltosystems.com/en-us/news/salto-certified-training-program-2022](http://saltosystems.com/en-us/news/salto-certified-training-program-2022)

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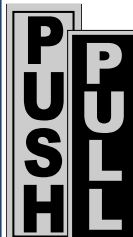
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- Certified Journey Level certification and/or Fire Door Inspector certification, but not contingent for position.

**Required Licensing and  
Certifications:**

- Valid Driver's license required. Must be able to obtain a valid NC driver's license within 60 days of hire and it must be maintained.
- Current NC locksmith license required, or the ability to pass NCLLB test within six months.



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1. Publication Title: LOCKSMITH LEDGER  
2. Publication Number: 587-900  
3. Filing Date: 9/19/22  
4. Issue of Frequency: Monthly  
5. Number of Issues Published Annually: 13  
6. Annual Subscription Price: \$47 US; \$57 Canada; \$77 Int'l  
7. Complete Mailing Address of Known Office of Publication (Not Printer): Endeavor Business Media, LLC, 1233 Janesville Ave, Fort Atkinson, WI 53538 Telephone: (334) 259-2806 Contact Person: DELICIA POOLE  
8. Complete Mailing Address of Headquarters or General Business Office of Publisher (Not Printer): Endeavor Business Media, LLC, 30 Burton Hills Blvd., Ste. 185, Nashville, TN 37215  
9. Full Names and Complete Mailing Addresses of Publisher, Editor, and Managing Editor - Publisher: JOLENE GULLEY-BOLTON, 1233 Janesville Ave, Fort Atkinson, WI 53538 ; Editor: STEVE LASKY, 1233 Janesville Ave, Fort Atkinson, WI 53538 ; Managing Editor: .

10. Owner - Full name and complete mailing address: Endeavor Media Holdings I, LLC, 905 Tower Place, Nashville, TN 37205; Endeavor Media Holdings II, LLC, 905 Tower Place, Nashville, TN 37205; Resolute Capital Partners Fund IV, LP, 20 Burton Hills Blvd, Suite 430, Nashville, TN 37215; RCP Endeavor, Inc. 20 Burton Hills Blvd, Suite 430, Nashville, TN 37215; Northcreek Mezzanine Fund II, LP, 312 Walnut Street, Suite 2310, Cincinnati, OH 45202; Invegarly Holdings, LP, 44235 Hillsboro Pike, Nashville, TN 37215; Everside Fund II, LP, 155 East 44th St, Suite 2101 - 10 Grand Central, New York, NY 10017; Everside Endeavor FI Blocker, LLC, 155 East 44th St, Suite 2101 - 10 Grand Central, New York, NY 10017; Everside Endeavor International Blocker, LLC, 155 East 44th St, Suite 2101 - 10 Grand Central, New York, NY 10017; Everside Founders Fund, LP, 155 East 44th St, Suite 2101 - 10 Grand Central, New York, NY 10017; Suncap Endeavor Blocker, LLC, 155 East 44th St, Suite 2101 - 10 Grand Central, New York, NY 10017.

11. Known Bondholders, Mortgagees, and Other Security Holders Owning or Holding 1 Percent or More of Total Amount of Bonds, Mortgages or Other Securities: None

12. Tax Status (For completion by nonprofit organizations authorized to mail at nonprofit rates) (Check one)  
The purpose, function, and nonprofit status of this organization and the exempt status for federal income tax purposes: N/A

13. Publication Title: LOCKSMITH LEDGER

14. Issue Date for Circulation Data: September 2022

| 15. Extent and Nature of Circulation                                                                                                                                                                                                                                                                          | Average No. Copies Each Issue During Preceding 12 Months | No. Copies of Single Issue Published Nearest to Filing Date |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------------|
| a. Total Number of Copies (Net press run)                                                                                                                                                                                                                                                                     | 12,813                                                   | 13,281                                                      |
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## 10 YEARS AGO

Jerry Levine's article on hospital security took an early look at touchless openings and antimicrobial door hardware, seven years before anyone heard of COVID. The article also addressed code and regulatory compliance. **Dortronics** provided an article on controlling access to clean-room environments by using mantraps and interlock controllers. Levine also tested the new **Command Access LPM180** electrified mortise lock. Gale Johnson reported on selling and installing electromagnetic locks. Articles on video surveillance discussed recurring monthly revenue possibilities and installation of a CCTV system at a 24-hour gym. The Builders Hardware Manufacturers Association explained BHMA standards that apply to door, cabinet and window hardware. An automotive report noted that more than 90 percent of the vehicles manufactured for the 2012 model-year were equipped with transponder-based engine immobilizer systems and listed the compatible **JMA** transponder-cloning machines on the market. Johnson shared tips on fitting keys to Honda motorcycles. Steve Young provided "A Brief History of Vehicle Entry Procedures" and concluded that lock-picking was the trend of the future. He confirms that trend in an article on vehicle opening in this issue, 10 years down the road.

## 20 YEARS AGO

Electromagnetic locks were featured in the November 2002 issue. Jerry Levine reported on the installation of a **Securitron** Magnalock. Tim O'Leary introduced the line of 101S Emlock products by **Security Door Controls**. O'Leary also showed how to field-modify **Trine** EN series electric strikes. Levine wrote about keypad units available from **Rutherford Controls**. He also showed the new remote release power mag kit from **Alarm Lock**. Joy Skowron, **STRATTEC Security**, showed locksmiths the new tumblers required to service GM "Z" keyway locks. Tom Gillespie suggested the Sprinter as a perfect van for locksmith work. A.J. Hoffman offered the calculations for pinning an IC core override cylinder for the **Schlage** Cobra lock. Mary Pike wrote about her enterprise, a combination beauty salon and locksmith business in Granbury, Texas. Jeff Trepanier also showed how to fit keys to a Chevrolet T6500 truck, which was actually a rebadged Isuzu. Earl Halls from **Adesco Safe** (later acquired by FireKing) offered ideas on how to sell safes.

## Some Automobile History

On Oct., 8, 1908, Henry Ford introduced the first Model T car, which cost a hefty \$825 and brought vehicle ownership to the masses for the first time. Production continued until 1927, with around 15 million Model T's manufactured in Detroit.

Early automobiles didn't have locks. (Some didn't even have doors.) Starting a car required drivers to manually crank the engine. Historians disagree slightly on when the first door, trunk and ignition locks were introduced.

Chrysler and Ford began to use pin tumbler door lock systems in the 1930s. Ignition and door locks generally were keyed alike, and key codes were printed somewhere on the cylinder housing.

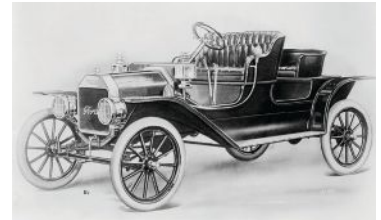
Ford began to use Hurd locks in 1932 and carried the same Ilco keyway through 1951. Fortunately, the key code was printed on every lock.

In the 1940s, Chrysler introduced vehicles equipped with ignition tumblers that could start cars. Locking systems were entirely mechanical, with no electronic parts.

For information on servicing classic car locks, read Gale Johnson's article, "A Look Back at Vintage Auto Locks," at [www.locksmithledger.com/10228044](http://www.locksmithledger.com/10228044).



» Ford convertible sedan, 1932, when Ford began using Hurd locks



» 1908 Ford Model T



» 1939 Lincoln Zephyr, the year Locksmith Ledger began publication

All Photos courtesy of Ford Motor Co.

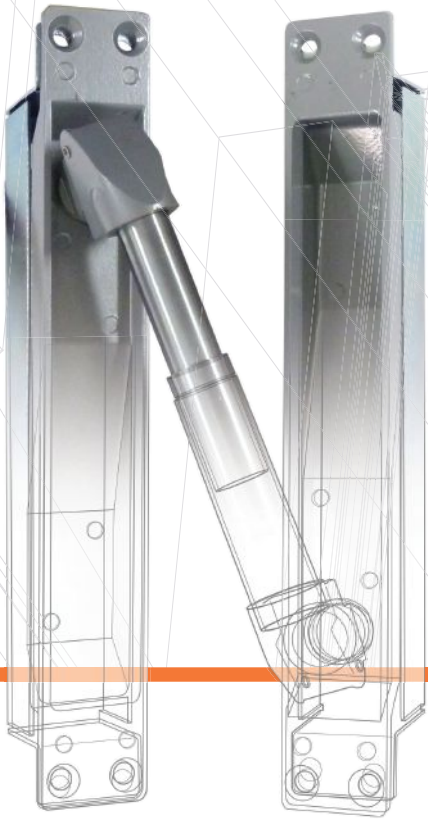
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Locksmith Ledger International (USPS #0587-900), (ISSN 1050-2254 print; ISSN 2771-6317 online) is published monthly with an additional issue in December by Endeavor Business Media, LLC. Periodicals postage paid at Fort Atkinson, WI 53538 and additional mailing offices. POSTMASTER: Send address changes to Locksmith Ledger International, P.O. Box 3258, Northbrook, IL 60065-3258. Canada Post PM40612608. Return undeliverable Canadian addresses to: Locksmith Ledger International, P.O. Box 25542, London, ON N6C 6B2.

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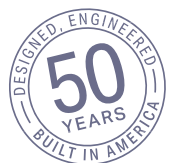
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